

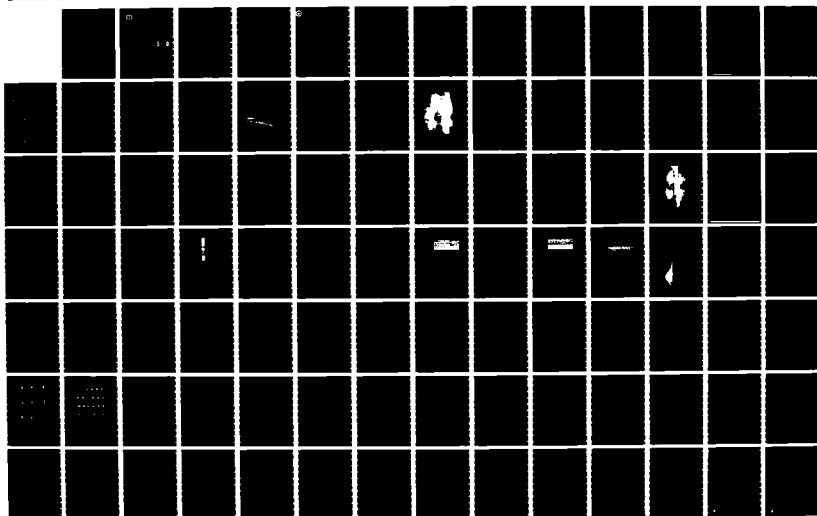
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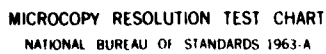
ARCHEOLOGICAL TESTING AT 16 CH 61 A PREHISTORIC SHELL
MIDDEN IN CAMERON P. (U) GOODWIN (R CHRISTOPHER) AND
ASSOCIATES INC NEW ORLEANS LA R C GOODWIN 09 JUL 86
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**US Army Corps
of Engineers**
New Orleans District

CULTURAL RESOURCES SERIES
Report Number: COELMN/PD-86/08

AD-A171 926

ARCHEOLOGICAL TESTING AT 16 CM 61,
A PREHISTORIC SHELL MIDDEN IN
CAMERON PARISH, LOUISIANA

Final Report
JULY 9, 1986

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Engineers. The archeological site 16 CM 61 is located in the potential impact area of the Mermentau River, Gulf of Mexico Navigation Channel Project. The objective of this study was archeological testing, analysis, and assessment, in order to determine the integrity and research potential of archeological deposits. The research effort focused on mapping of the site area, controlled surface collection, and auger, shovel, and limited test unit excavations. Subsequent analyses of remains were designed to determine the ability of the site to contribute to understanding of local and regional prehistory. Fieldwork at 16 CM 61 revealed the presence of intact cultural deposits, and the analysis of ceramic artifacts indicated that the site has internal microstratigraphy suggestive of multiple episodes of activity and refuse disposal. Ceramic classification indicated a Coles Creek period occupation and a single C14 date of A.D. 990 \pm 100 years was obtained. Analysis of shells of Rangia cuneata and of fish otoliths indicated a spring or summer occupation for the site. Because of the presence of extensive in situ deposits, and due to the demonstrable research potential of the site, the site is believed to be eligible for the National Register of Historic Places.



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DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

P.O. BOX 80287

NEW ORLEANS, LOUISIANA 70180-0287

REPLY TO

ATTENTION OF

June 17, 1986

Planning Division
Environmental Analysis Branch

TO THE READER:

This cultural resources effort was designed, funded and guided by the U.S. Army Corps of Engineers, New Orleans District as part of our cultural resources management program. The effort documented in this report was the first step in a plan of action for site 16CM61 developed by the New Orleans District and agreed upon by the Louisiana State Historic Preservation Officer.

The plan of action recognizes that site 16CM61 is in the potential impact area of the Mermentau River, Gulf of Mexico Navigation Channel project but also recognizes that the National Register eligibility of the site had not been determined and a project effect has not been confirmed. The first step was archeological testing to determine the integrity and research potential of the site. Should the site be determined eligible for inclusion in the National Register, we will then institute an erosion monitoring program. This would involve the establishment of a datum and detailed mapping of the site. The erosion rate at the site would then be monitored over a few years and compared to prevailing rates in the region. If an adverse project effect is determined, we would consult with the SHPO and Advisory Council on Historic Preservation to develop an appropriate mitigation program.

It is our opinion that the Contractor has demonstrated the research potential of site 16CM61 and we, therefore, agree with the recommendation that the site is eligible for inclusion in the National Register of Historic Places.

The Louisiana SHPO has also concurred with this recommendation and we are proceeding with a request for determination of eligibility from the Keeper of the National Register.

We compliment the Contractor on a job well done. The report reflects well on the Contractor and the New Orleans District.

Caroline H. Albright
Caroline H. Albright
Technical Representative

Michael E. Stout
Michael E. Stout
Authorized Representative
of the Contracting Officer

Cletis R. Wagahoff
Cletis R. Wagahoff
Chief, Planning Division

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CHAPTER I

INTRODUCTION

This report presents the results of archeological testing at the site 16 CM 61, a prehistoric shell midden located at Mile 17.5 on the right descending bank of the Mermentau River, in Cameron Parish, Louisiana (Figure 1). Investigations reported herein were undertaken pursuant to Delivery Order No. 11, Contract No. DACW29-84-D-0029, for the New Orleans District, U. S. Army Corps of Engineers. A previous study of 16 CM 61 by Texas A&M University (Tribble and Garrison 1982) concluded that this site had the potential to provide information important to understanding of local and regional prehistory; these authors also concluded that the site was undergoing adverse effects, due to erosion caused by navigational use of the lower Mermentau River.

The archeological site 16 CM 61 is located in the potential impact area of the Mermentau River, Gulf of Mexico Navigation Channel Project (Figure 2). This project, which was authorized by the Flood Control Act of 1941, provided for the enlargement of the Mermentau River below Grand Lake for discharge of periodic flood flows. The Mermentau River, Gulf of Mexico Navigation Channel was constructed in 1971 by local interests. The Corps of Engineers assumed maintenance of this project in 1976. The economic justification for Federal maintenance of the Navigation Channel is the continuance of navigation on the lower Mermentau River. Today, vessel traffic along the lower Mermentau River consists primarily of shrimp trawlers and sport fishing boats.

In consultation with the Louisiana State Historic Preservation Officer, the New Orleans District, Corps of Engineers, designed a plan of action that recognizes that the site 16 CM 61 is in the potential impact area of the aforementioned project. However, that plan also noted that the National Register eligibility of the site had not been established; similarly, project effects had not been demonstrated. The research effort reported in this report, then, comprises the initial stage of work described in the plan of action for the archeological site 16 CM 61. The objective of this study was archeological testing, analysis, and assessment, in order to determine the integrity and research potential of archeological deposits, issues bearing directly on the eligibility of the site for the National Register of Historic Places (36 CFR 60.4).

Although the Texas A&M study (Tribble and Garrison 1982) provided descriptive data on the site, which was described as a multi-component shell midden extending approximately 70 cm below the ground surface, this study failed to provide sufficient

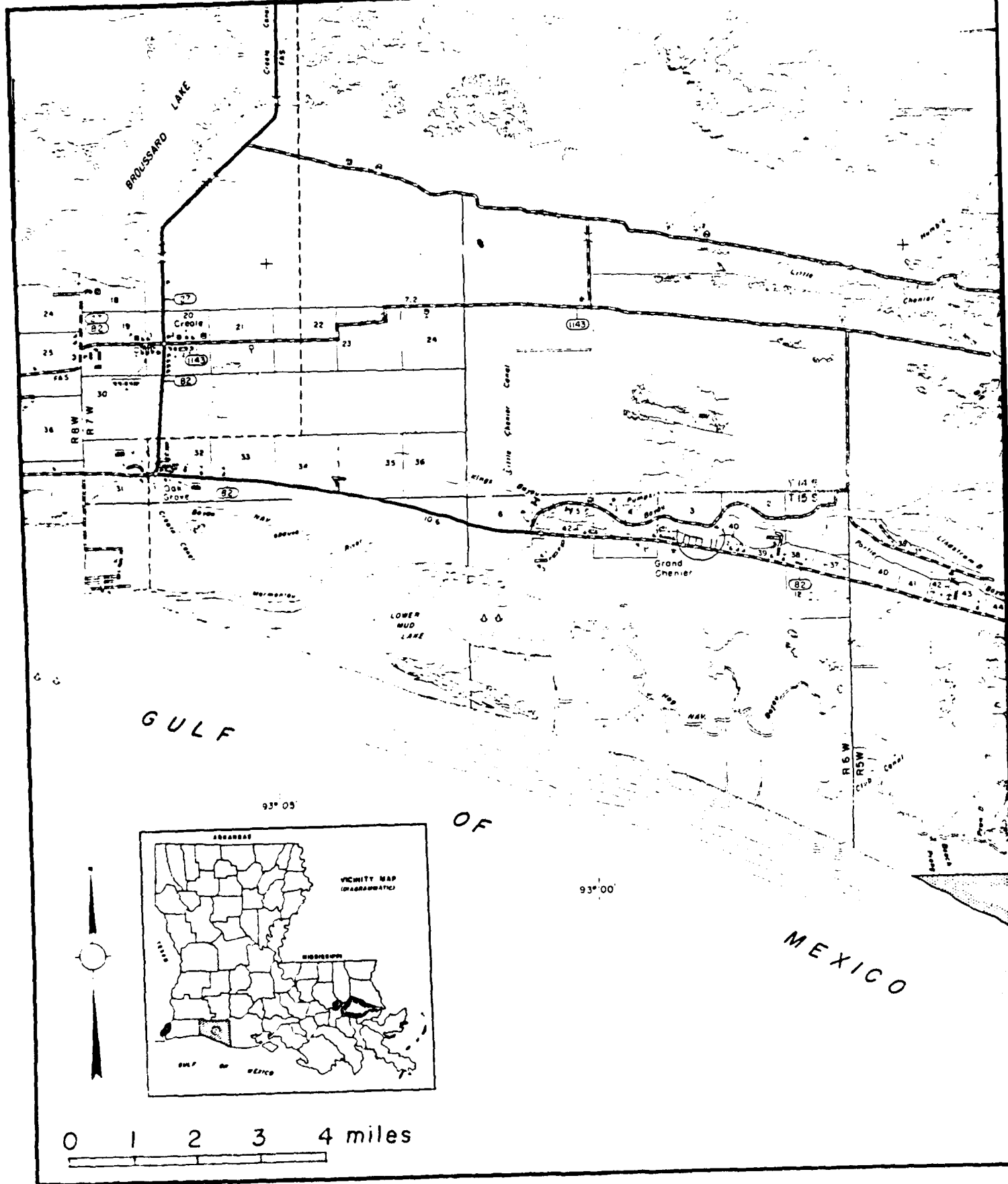
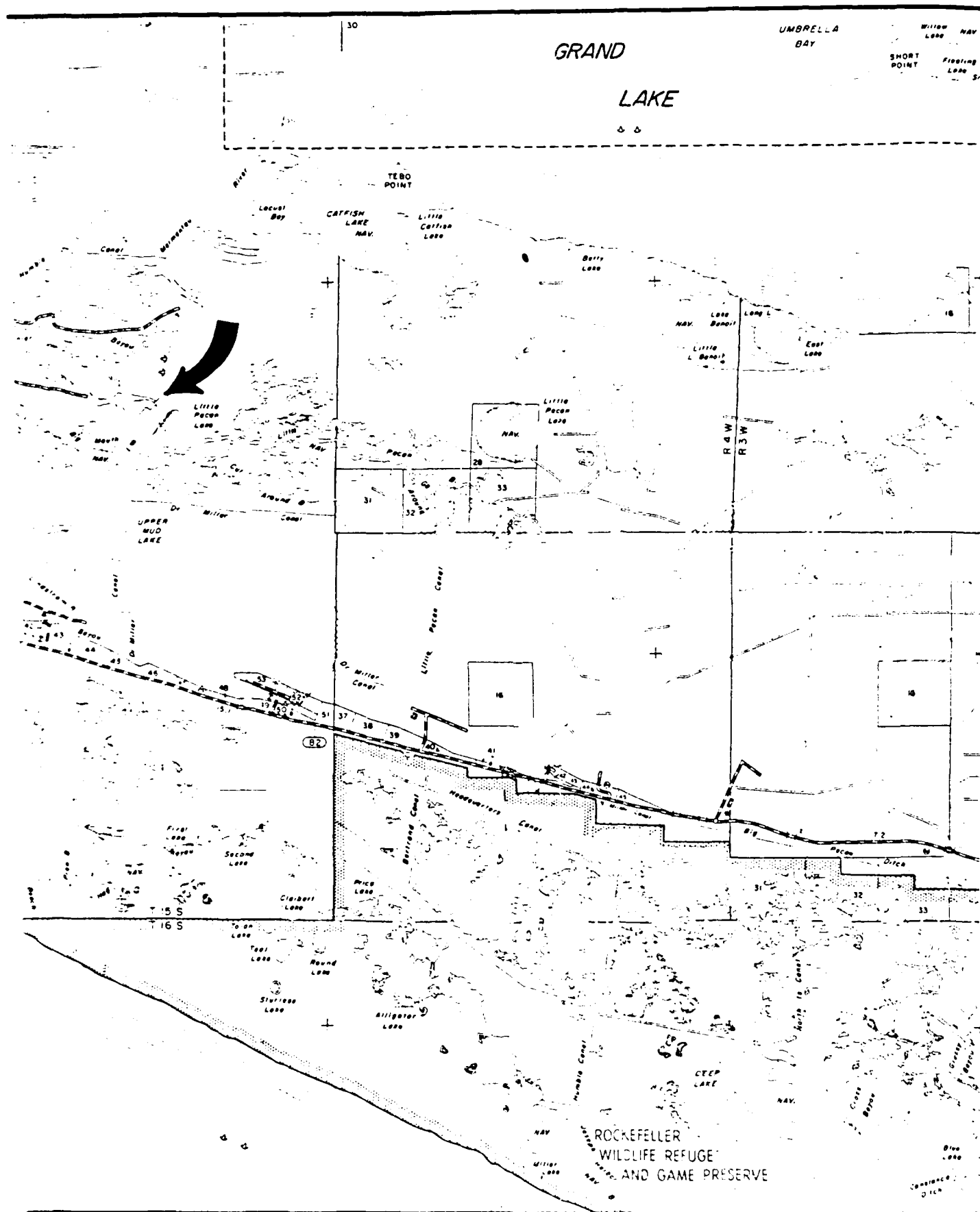


Figure 1. Map of the Lower Mer Rouge Parish, Louisiana (showing location of site 16)



Mermentau River Area, Cameron Parish, Louisiana (see inset), showing approximate location of the 16 CM 61 (LA DOTD 1976 Series).

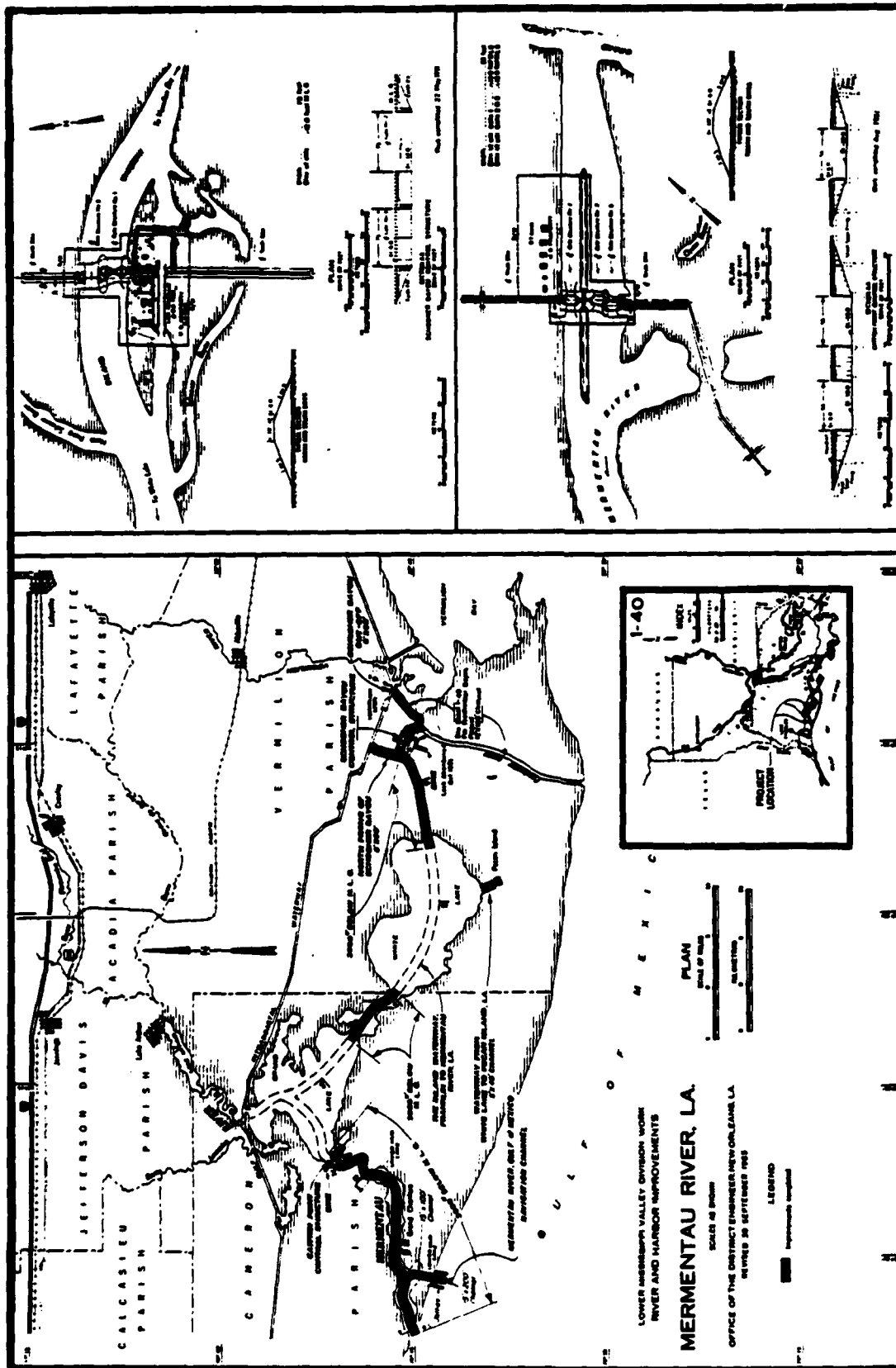


Figure 2. Mermentau River, LA project including Mermentau River, Gulf of Mexico Navigation Channel.

information to enable assessment of National Register eligibility. The horizontal and vertical extent of the site also were not defined. The present research effort, then, focused on mapping of the site area, controlled surface collection, and auger, shovel, and limited test unit excavation, so that the nature and extent of buried remains could be documented. Subsequent analyses of remains were designed to determine the ability of the site to contribute to understanding of local and regional prehistory.

In the following chapters, the natural setting and prehistory of the region containing the site 16 CM 61 are reviewed, with particular emphasis on previous research both at the site in question here and at analogous midden sites in the Chenier Plain of Southwest Louisiana. Research problems important to understanding of the prehistory of the region then are discussed, and research objectives identified for this project are delineated. Field investigations at the site, conducted in October and December, 1985, then are reported. This discussion focuses on description and interpretation of the vertical stratigraphy of the site, as well as on its horizontal milieu. Previous project impacts to the site are described, as are the present condition and integrity of the remains. Artifacts from the site, which consisted almost entirely of prehistoric ceramic sherds, then are discussed. Faunal remains are treated subsequently; because of the extensive Rangia cuneata shell deposits there, as well as the recovery of fish otoliths during excavation, this section of the report focuses on the archeological issue of seasonality, a primary research concern in the prehistory of the region. Finally, the results of this study of 16 CM 61 are reviewed in comparative perspective with other documented sites in the area. These results then are applied in assessment of the significance of 16 CM 61, applying the National Register criteria (36 CFR 60.4).

CHAPTER II

THE NATURAL SETTING

The prehistoric site 16 CM 61 is located at Mile 17.5 on the west (right descending) bank of the Mermentau River, near the fragmented and degraded edge of Chenier Perdue Ridge, in Cameron Parish, Louisiana (Figure 1). This setting is on the Marginal Deltaic or Chenier Plain, a low coastal marshland characterized by the presence of series of relict beach ridges, or cheniers (Byrne, Leroy, and Riley 1959; Gould and McFarlan 1959; Burden et al. 1978; Gagliano et al. 1982; Weinstein et al. 1979). Cheniers, which take their name from the French designation for the stands of oaks that mark these elevated features in an otherwise flat and regular marshland topography, were created during the Holocene Epoch by the accretion and reworking of marine shells and sands along former Gulf of Mexico shorelines. These ridges were primary loci of both prehistoric and historic activity and settlement in the region, while the surrounding marsh provided natural resources for subsistence and economic pursuits.

Gould and McFarlan (1959), in their pioneering study of the geologic history of the Chenier Plain, described the formation and chronology of chenier development:

At times of abundant sediment supply, the shore moved rapidly seaward through the accumulation of marsh-capped mudflat deposits; during periods of slight sediment influx, wave attack slowed or halted the advance and locally brought about shore retreat. It was during these latter periods that the beach ridges, or cheniers, which now stand as relict "islands" in the marsh, were developed. Ranging in age from 2800 to less than 300 years, these ridges record progressive changes in the configuration of the shoreline as it advanced seaward... to its present position (Gould and McFarlan 1959:1).

Typical cheniers were characterized by Burden et al. (1978), in their report on an archeological survey of the Lacassine National Wildlife Refuge, approximately ten kilometers north of the project area under consideration here. They wrote,

The relict beaches are lenticular sand and shell bodies, the crests of which extend as uninterrupted ridges parallel to the coast for distances up to 48 kilometers (30 miles). They are biconvex in cross section and average about

180 meters (600 feet) across, and 2.1 meters (7 feet) in thickness. They rise from a few inches to more than 3 meters (10 feet) above the near-sea-level marsh surface. The seaward fronts of the cheniers are generally smooth and arcuate, while the landward margins branch and show other irregularities. The sand and shell deposits of the cheniers overlies nearshore Gulf sand and silty clay facies and are overlapped by organic silt and clay marsh deposits (Burden et al. 1978:23).

As noted above, the site 16 CM 61 is located on the Mermentau River near the eastern end of Chenier Perdue Ridge. Other chenier ridges in the area include Little Chenier to the north, Pumpkin Ridge and the larger barrier island Grand Chenier to the south, and Hackberry Ridge and Indian Point Island east of the Mermentau River. Using the radiocarbon chronology assembled by Gould and McFarlan (1959), Burden et al. (1978:22) have shown graphically the relative chronological position of these beach ridges (Figure 3). This reconstruction places the formation of the Chenier Perdue Ridge at about 2200 - 2400 B.P. It should be noted, however, that their reconstruction (Figure 3) does not show the chenier extending to the Mermentau River, and it portrays the site 16 CM 61 on the east or left bank of the river, rather than on the right descending bank at the margin of the chenier. An isolated remnant of Chenier Perdue Ridge is located .6 km northwest of site 16 CM 61. Deposition at the archeological site may be directly associated with that part of the chenier ridge, or with a buried subsidiary ridge.

The location of archeological site 16 CM 61 on the eroded eastern end of Chenier Perdue Ridge was reported by the Cultural Resources Laboratory of Texas A&M University (Tribble and Garrison 1982:102). There are no clearly recognizable surface manifestations of the chenier ridge at the site. Tribble and Garrison describe the location as a beach ridge, but the only elevated areas in this vicinity are modern spoil banks and earth containment dikes. The major spoil bank which demarcates the southern edge of site 16 CM 61 may lie atop a beach ridge, but construction of that spoil bank and an adjacent drainage channel has obscured the original topography of this locale.

The sandy strata which Gagliano et al. (1982) considered diagnostic of chenier beach ridges was not encountered in subsurface testing at 16 CM 61 during the 1980 or 1985 fieldwork. Some admixture of sand was noted in one auger test (N 5015, E 5000), but was not present in the dredged material forming the spoil bank at the site. The shell hash found in situ at the site nonetheless indicates an association with chenier deposition.

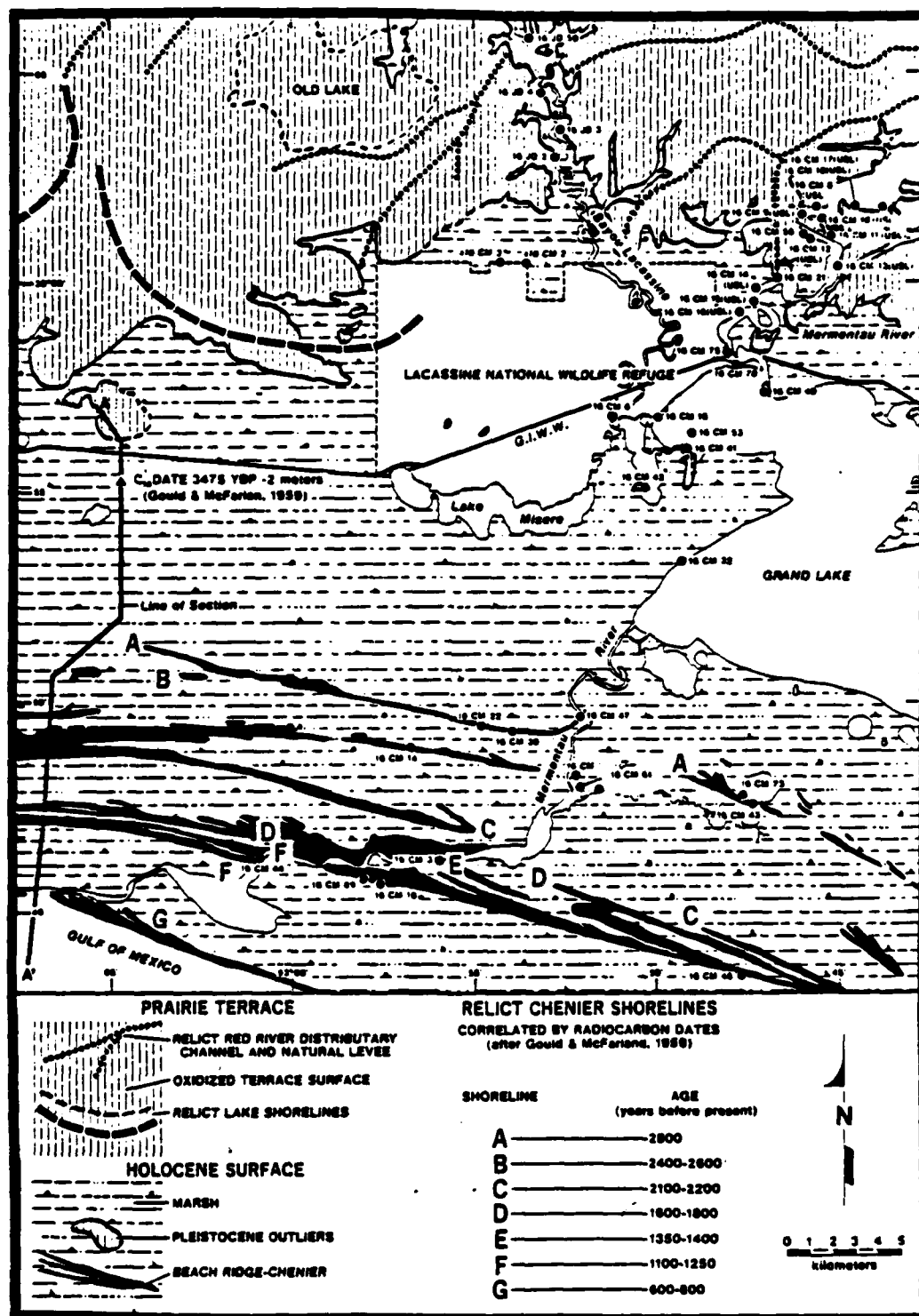


Figure 3. Reconstruction of chenier ages in the vicinity of the project area (after Burden et al. 1978:3-5).

The major eastern terminus of Chenier Perdue Ridge is marked by a low ridge .6 km northwest of 16 CM 61. That ridge is indicated by the five foot contour interval on the 7.5' Grand Chenier quad. The general trend of Chenier Perdue Ridge is west-east, parallel to the present coastline. The eastern terminus of the ridge curves northward, creating a local southwest-northeast trend roughly parallel to the nearby course of the Mermentau River. The overall configuration of Chenier Perdue Ridge is similar to that of Little Chenier Ridge to the north. The factors controlling the development of these two chenier ridges produced discernible alignments, even where present surface manifestations of the ridge systems are discontinuous (Gagliano et al. 1982:Figures 2-20).

The elevated eastern terminus of Chenier Perdue Ridge indicated by map data may not be the ridge nearest to site 16 CM 61. A common pattern of chenier and accretion ridges is the development of a large back ridge, or a series of subparallel back ridges, at an arc of 15° to 45° from the dominant trend of the front ridge (Gagliano et al. 1982:26-27). The back ridge often is higher and more extensive than the nearby section of the front ridge. The recognizable eastern section of Chenier Perdue Ridge may represent a back ridge development, modified by the presence of the Mermentau drainage system.

The extension of the front ridge of Chenier Perdue Ridge eastward along its dominant trend would intersect the course of the Mermentau River at or near 16 CM 61. Fieldwork has not demonstrated the existence of a beach ridge at this locality, but the presence of shell hash in the site probably reflects deposition in the immediate vicinity of the front ridge on one of a set of subparallel back ridges. The clay and silty clay soil at 16 CM 61 may represent riverine deposition above a buried chenier ridge or subareal sandbar, or on the shallow sloping beach of the chenier ridge .6 km northwest of the site. Site 16 CM 61 thus is associated with Chenier Perdue Ridge, although utilization of this locale was later than the formation of the ridge system. The shells and shell hash recovered from the site reflect the proximity of the observable section of Chenier Perdue Ridge at a distance of .6 km, or of a closer buried ridge. The existence of a buried chenier beach ridge at 16 CM 61 is plausible, but has not been demonstrated. Elucidation of the local chenier-related deposits would require additional subsoil testing beyond the site area of 16 CM 61, or the utilization of bathymetry and sub-bottom profiling (Gagliano et al. 1982:27). Tribble and Garrison's (1982) description of the site area as part of Chenier Perdue Ridge apparently was based on the identification of modern artificial features as the original land surface, and is unreliable.

Brackish and freshwater marsh vegetation predominates in the vicinity of the archeological site under discussion here. As Neuman (1977:2-3) has noted, sawgrass (Cladium jamaicensis) distinguishes Chenier Plain vegetation from that of the Inactive Delta. Wiregrass (Spartina alterniflora), saltgrass (Distichlis spicata), and three-cornered grass (Scirpus olneyi) are dominant brackish marsh species; freshwater three-cornered grass (Scirpus americanus), dogtooth grass (Panicum repens), and yellow cut-grass (Zizaniopsis miliacea), are found in freshwater settings. Burden et al. (1978) divide the vegetation of the region into two "types," or associations: marsh species, and natural and artificial levee species. The latter includes shrub brush species, such as button bush (Cephalanthus occidentalis), willow (Salix nigra), hackberry (Celtis laevigata), and roseau (Phragmites communis). Although several trees are present on the narrow elevated spoil banks and retention dikes near 16 CM 61 (Figure 4), there are no extensive wooded areas near the site. Along elevated areas, mixed brush and pasture are present; part of this area is used for grazing cattle. A large earth retention dike parallel to the western bank of the Mermentau River lies to the north and west of site 16 CM 61. The vegetation pattern in the vicinity of the site has been modified by the creation of an extensive system of drainage canals and earth levees in this area.

The region containing 16 CM 61 is highly vascular, and all lowlying areas are subject to flood. Slightly elevated relief features also may be inundated by flood waters; the current project was delayed when the lowlying portions of the site near the Mermentau River was flooded for several weeks in late October and early November, 1985, by Hurricane Juan. According to Gibson (1975:24), the three meter contour comprises the limit of flooding along the Mermentau; elevations between 1.6 and 3 meters are subject to occasional flooding, while lower elevations receive water with periodicity. Numerous oil and gas field canals crosscut the area; a number of these intersect the lower Mermentau River, which flows from Grand Lake, to the northeast, in a southwesterly direction to the Gulf Mexico. Tidal effects are noted along the Mermentau River as far north as Bayou Queue de Tortue, above Grand Lake (Gibson 1975:1). Erosion and subsidence are dominant processes in the region today.

Vertebrate faunal species indigenous to the region are enumerated in Neuman (1977). Species recognized in archeological assemblages from the region include deer (Odocoileus virginianus), rabbit (Sylvilagus sp.), raccoon (Procyon lotor), alligator, turtles, and several species of birds (e.g., Meleagris gallopavo). Burden et al. (1978) note the presence of forty-five species of birds in the Lacassine National Wildlife Refuge). Fishes such as gar (Lepisosteus sp.), sucker (Catostomidae), and drum (Sciaenidae), also are plentiful. Gibson (1975:27-30) has



Figure 4. View of 16 CM 61 from the Mermentau River, showing vegetation on site.

reviewed the population densities of mammalian game species in the upper Mermentau River area; he also points out that salt water fish species, such as bay anchovy and menhaden, may enter the Mermentau, although relevant catch data are not documented. Gagliano et al. (1982:29) note that the environment of the region, and its humid subtropical climate, probably are similar today to that which obtained prehistorically, during the period of aboriginal settlement.

The most commonly observed faunal species in the study area today is the brackish water bivalve Rangia cuneata. The modern distribution of this species extends as far north up the Mermentau as the mouth of Bayou Queue de Tortue (Gibson 1975). Hoesel (1973) documented an average density of seventeen Rangia clams per square meter in Grand Lake, approximately five kilometers northeast of 16 CM 61. Rangia shell middens are visible from the water at intermittent locations along the length of the lower Mermentau River (Tribble and Garrison 1982:7), attesting to intensive exploitation of this resource during the prehistoric period. Gibson (1975:29) has referred to Rangia as the "single most abundant (prehistoric) source of protein" in the area. Because the site 16 CM 61 is a shell midden, Rangia cuneata will be discussed in more detail in subsequent sections of this report. As Gibson (1975), Gagliano et al. (1982), Tribble and Garrison (1982), and Burden et al. (1978) have pointed out, oyster shells (Crassostrea virginica) are encountered archeologically in the area, although they are not known to exist in adjacent reaches of the Mermentau River today.

CHAPTER III

THE PREHISTORIC SETTING

Introduction

The prehistory of the Chenier Plain region of Southwest Louisiana that contains the archeological site 16 CM 61 is poorly understood. Although a number of cultural resources surveys have been undertaken in recent years, historically this region has been off the beaten path of archeological research. As frequently is the case in frontier or transitional zones between centers of prehistoric cultural development, archeological study in the Chenier Plain in large measure has focused on delineation of stylistic similarities to better studied complexes. Because of resemblances to the prehistoric sequence developed for the Lower Mississippi Valley (viz Phillips 1970), that cultural chronology has served as the most frequently applied framework for interpreting the prehistory of the Chenier Plain. For the same reason, most recent studies have applied the type-variety system to analyses of prehistoric ceramics (Aten 1983; Burden et al. 1978; Weinstein et al. 1979). One report (Tribble and Garrison 1982) relied entirely on the Lower Valley chronology in discussion of the prehistoric sequence in this area. Before discussing both previous research in and the state of archeological knowledge about the Chenier Plain, the chronology of the Lower Mississippi Valley is reviewed here as a baseline against which the prehistory of the Chenier Plain can be viewed. It should be noted, however, that the differences between Chenier Plain prehistory and the Lower Mississippi Valley are at least as significant as any similarities that are stressed in the archeological literature.

Cameron Parish and the site 16 CM 61 are located in the southwest corner of the thirteen parish area of Southwestern Louisiana designated in Louisiana's Comprehensive Archeological Plan as Management Unit III. To date, forty-seven prehistoric archeological sites have been reported in Cameron Parish. No Paleo-Indian sites and only one Archaic site have been recorded; eleven Tchefuncte components, four Marksville components, twenty-three Troyville-Coles Creek components, five Plaquemine, and three Mississippian components are recorded in the state site files (Smith et al. 1983).

The Prehistoric Culture Sequence

The earliest well defined archeological evidence of human habitation in North America is represented by the Paleo-Indian stage. A date range of 10,000 - 6,000 B.C. has been suggested for Paleo-Indian occupation of the Lower Mississippi River alluvial

valley (Brain 1971:3). Archeological evidence from the western United States indicates that Paleo-Indians were semi-nomadic big game hunters. The material culture of the Paleo-Indian period is best exemplified by the manufacture of large, thin, bifacially-worked lanceolate projectile points which had a "fluted" or channel flake scar at their base. Fluted point complexes include the Llano, Clovis, Folsom, and Plano traditions.

The following Archaic stage reflects cultural adaptations to climatological change occurring after the retreat of the last Pleistocene glaciation (ca. 8,000 B.C.). Critical environmental changes influencing human adaptation during the Archaic period have been summarized by Bryant et al. (1982:21-22) as follows:

1. The extinction, without replacement, of much of the Pleistocene megafauna, including the elephant, horse, and camel, and most of the Bison species on which the Lithic stage economy had been largely based.
2. Certain fluctuations in rainfall and temperature as yet only partly understood but presumed to relate to worldwide climatic changes and to be generally correlated with glacial retreat and oscillations.
3. The plant and animal recolonization of the areas of North America which were previously glaciated, and establishment of the modern geographical position of the major North American lifezones.
4. The changing volume and gradient of river systems draining eastern North America generated by worldwide deglaciation and rising sea levels.

Archaic cultural complexes are represented by localized stone tool traditions which are thought to represent regional adaptations to different local environmental conditions (Bryant et al. 1982:22). Projectile point types found in early Archaic sites include San Patrice, Meserve and Dalton. A shift towards exploitation of smaller and more varied game occurred along with an increase in gathering of plants and previously ignored animal species, such as shellfish. Archaic subsistence patterns became increasingly more efficient with advances in technology which included ground stone tools, such as adzes and metates, and the use of the atlatl (spear thrower). Common point types for the Middle Archaic are Big Sandy, Keithville, Yarbrough, Evans, and Carrollton. A gradual settlement pattern shift from semi-nomadic

to seasonal site occupancy to semi-permanent settlement is evidenced during the Archaic.

The appearance of earthwork and burial mound construction in the late Archaic marked the development of the Poverty Point culture in Louisiana, circa 1500 B.C. Considered to be either an Archaic-Formative transition or an Archaic climax phenomenon, the Poverty Point site, located in West Carroll Parish, is unique in North American prehistory. Although small quantities of fiber-tempered pottery are present at the Poverty Point site, some scholars argue that the culture was aceramic. Nevertheless, crude pottery figurines and irregular-shaped fired clay objects, possibly used in "stone boiling" cooking techniques, occur in Poverty Point contexts (Bryant et al. 1982:23). Poverty Point material culture also is represented by fine stone lapidary work, steatite or soapstone vessels, and a microlithic tool industry. Subsistence appears to have been based on intensive hunting and gathering, although prior emphasis on protein capture may reflect bias in archeological study of the Poverty Point period. Projectile point types originating in the Late Archaic and continuing into the Poverty Point period are Gary, Ellis, Pontchartrain, Kent, Carrollton, and Marshall, and larger forms such as Hale.

The next stage in the chronological sequence for the region is called the Neo-Indian era. The appearance of pottery and arrow points in the archeological record is generally used to mark the beginning of this era. Changes in settlement patterns from semi-permanent to permanent villages, and the introduction of agriculture, characterize Post-Archaic periods. The most frequently applied regional chronology of the Neo-Indian era in South Louisiana includes the following periods.

The first of these periods is the Tchula or Tchefuncte, which has been dated from ca. 100-500 B.C. During the Tchefuncte period, pottery became important in prehistoric Louisiana, and increasing amounts of pottery with rocker stamped decoration and with tetrapodal supports were made. The soft Tchefuncte pottery had poorly compacted paste, and common vessel forms included bowls and cylindrical and shouldered jars. Decoration also included fingernail and tool punctation, incision, simple stamping, drag and jab, parallel and zoned banding, and stippled triangles. Tchefuncte pottery apparently derived from and was genetically related to earlier ceramic complexes at Stallings Island, Georgia, Orange in North Florida, and to the Poverty Point culture. Ford (1969:193) speculated that commonalities in ceramics across the Gulf South states during this period reflected the breakdown of ethnic barriers due to the powerful influence of the arrival of maize (corn) agriculture.

The Tchefuncte artifact assemblage includes boatstones, grooved plummets, mortars, sandstone saws, barweights, scrapers, and chipped celts. Socketed antler points, bone awls and fish hooks, and bone ornaments also have been found. Projectile point types found in Tchefuncte contexts are Gary, Ellis, Delhi, Motley, Pontchartrain, Macon and Epps. The population of the Tchefuncte period appears to have been a melange of long-headed Archaic peoples with a new subpopulation of broad-headed people who practiced cranial deformation, and who are thought to have entered the southeast from Mexico. The presence of rocker stamped pottery, burial mounds, and of some other individual traits, also shows similarities to the Hopewellian development (500 B.C. to A.D. 300).

The subsequent Marksville period (100 B.C. - 300 A.D.) to a large degree is a localized hybrid manifestation of the Hopewellian culture climax that preceded it in the Midwest. The type site is located at Marksville, Louisiana. Elsewhere in the state, smaller sites occur which display both Marksville pottery types and a modified form of the Marksville mortuary complex. Marksville houses appear to have been circular, fairly permanent, and possibly earth covered. The economic base of the Marksville culture seems to be a further modification of the Poverty Point - Tchefuncte continuum, albeit prior emphasis on the importance of hunting, fishing, and gathering aspects of subsistence in relation to agriculture may have been overstated. A fairly high level of social organization is indicated by the construction of geometric earthworks and of burial mounds for the elite, as well as by a unique mortuary ritual system. Although large quantities of burial furniture are not recovered from Marksville sites, some items, particularly elaborately decorated ceramics, were manufactured especially for inclusion in burials.

Marksville ceramics were well-made, with decorations that included u-stamped incised lines, zoned dentate stamping, zoned rocker stamping (both plain and dentate), the raptorial bird motif, and, flower-like designs. The cross-hatched rim is particularly characteristic of Marksville pottery, and may relate this complex to other early cultural climaxes in the Circum-Caribbean area. Plain utilitarian wares also were produced. Perforated pearl beads, bracelets, and celts have been recovered from Marksville contexts.

The next cultural period identified for south Louisiana is the Troyville or Baytown phase (A.D. 300-700). This transitional period followed the decline of the Hopewellian Marksville culture; it is poorly understood. Except for the type site at Jonesville, knowledge of the Troyville culture is based on the discovery of Troyville ceramics in other sites. Among the pottery types clustering in the Troyville period are: Mulberry Creek Cord

Marked, Marksville Incised (Yokena), Churupa Punctated, Troyville Stamped, Larto Red Filmed, Landon Red-on Buff, and Woodville Red Filmed. However, these pottery types and most other traits are not confined solely to this period. Troyville is thought to represent the period when maize agriculture and the bow and arrow were adopted. Evidence for agriculture includes shell hoes and grinding stones. Baytown subsistence included the capture of large fishes, aquatic reptiles, deer, and small mammals (Gibson 1978:35).

The subsequent Coles Creek period (A.D. 700 - 1200) developed out of Troyville. Coles Creek was a dynamic and widespread manifestation throughout the lower Mississippi Valley. Coles Creek may be viewed as the local early or pre-classic variant of the Mississippian tradition, and its emphasis on temple mound and plaza construction again suggests Mesoamerican influence. Population growth and areal expansion were made possible by increasing reliance on productive maize agriculture. The seasonal exploitation of coastal areas supplemented the maize economy of large inland sites, and small non-mound farmsteads were present. A stratified social organization with a dominant priestly social class continued. The construction of platform mounds became important during this period. These were intended primarily as bases for temples or other buildings, but also contained burials. Rounded smaller mounds were still present. A common motif of Coles Creek ceramics is a series of incised lines parallel to the rim. Pottery types include: Coles Creek Incised, Pontchartrain Check Stamped, and Mazique Incised.

In the southern part of the lower Mississippi Valley, the Plaquemine culture developed out of a Coles Creek background. Ceremonial sites of this period consisted of several mounds arranged about a plaza area. Associated small sites were dispersed about such centers. Social organization and maize agriculture were highly developed. The most widespread decorated ceramic type of the Plaquemine period was Plaquemine Brushed. Other types include Harrison Bayou Incised, Hardy Incised, L'Eau Noir Incised, Manchac Incised, Mazique Incised, Leland Incised, and Evansville Punctate. Both decorated types and plain wares, such as Anna Burnished Plain and Addis Plain, were well made. Diagnostic Plaquemine projectile points are small and stemmed with incurved sides.

The predominant ceramic types identified by Tribble and Garrison (1982:102, 114) at 16 CM 61 pertain to the Baytown and Coles Creek Periods, with a slight representation of Harrison Bayou Incised, a Plaquemine variety. James W. Springer (1979) recovered ceramics of the Coles Creek and Plaquemine Periods at the nearby Pierre Clement Site (16 CM 47), indicating a later occupation of the village site there. Site 16 CM 47 has a

tentative date of ca. A.D. 1300 (Springer 1979:68). The presence of shell-tempered ceramics at the Pierre Clement site may be associated with the protohistoric Attakapa of the region (Gagliano et al. 1982:29).

Late in the prehistoric period, the indigenous Plaquemine culture came under the influence of Mississippian cultures from the Middle Mississippi River Valley. Mississippian culture was characterized by large mound groups, a widespread distribution of sites, and shell tempered pottery. A distinctive mortuary cult or complex, called "Southern Cult," that made use of copper, stone, shell, and mica was introduced, and elaborate ceremonialism reflected in animal motifs and deities pervaded Mississippian culture. Trade networks were well established during this period, and raw materials and specialty objects were traded across large areas of the central and southern United States.

During the French and Spanish occupation of Louisiana, Cameron Parish was part of the Attakapas District. The earliest recorded historic Indian groups in the study area were the Attakapas Indians. Although the Attakapas in general, and the western groups in particular, were not well-documented ethnographically, there appears to be consensus that "these peoples were among the most primitive to be found in North America" (Gibson 1975:12). The Attakapas usually are characterized as cannibals in the anthropological and archeological literature. Their subsistence pattern appears to have been dominated by hunting, gathering, and fishing, although some Texas Attakapas groups appear to have practiced limited horticulture.

The Attakapas are thought to have been organized in bands; ethnographic and archeological data have led Aten (1984:88-89) to conclude that even smaller groups may have been dispersed in seasonal camps during the warm seasons, and that village aggregations of from one to four hundred people were a cold season phenomenon. Three principal groups or bands generally are attributed to the Louisiana Attakapas; one of these was located on the Vermilion River, one was settled along the Calcasieu River, and one is known as the Mermentau Band (Gibson 1975:12). Together with southeastern Texas groups such as the Akokisa, Bidias, and Deadoze, these three Attakapas groups also have been called the "provincial Attakapans" (Newcomb 1961; Gibson 1975). A hypothetical trajectory of demographic change has been advanced by Aten (1984) for the Akokisas, and by extension for other Attakapas groups. Aten (1984) argues that population was increasing significantly during late prehistory, and then declined in a "stair-step" pattern to extinction during the late eighteenth and early nineteenth centuries as a result of epidemic diseases and hostilities.

Previous Investigations

As noted above, until recently archeological activity in the Mermentau River area has been minimal. Although shell middens have been recognized in the region since at least prior to the advent of the last century, systematic excavations have been rare and comparatively little has been written about the regional prehistory. Several recent developments, however, have begun to improve the climate for archeological understanding of the prehistory of Southwestern Louisiana. First, contemporary compliance surveys of waterways and of impact corridors for pipelines and other construction projects have begun to provide useful data on site distributions, on chronology, and on aboriginal subsistence. Second, an improving data base on the prehistory of adjacent areas of Southeastern Texas has special relevance to the region under consideration here because of both environmental and cultural similarities. The affinity between the historic Akokisa of the Texas Coast and the Louisiana Attakapas already has been mentioned. In the following discussion, recent archeological investigations germane to the prehistory of the region under consideration here are reviewed. As will be seen, these studies have focused variously on ceramic typology, on chronology, and to a lesser extent on subsistence and settlement practices and patterns.

Several regional archeological studies have been conducted in the Mermentau River Basin since the mid-1970s. The Mermentau River is formed by the confluence of Bayou Nezpique and Bayou Des Cannes (Gibson 1975:1-3). The course of the Mermentau River from that confluence to Grand Lake often is designated the Upper Mermentau, and the river's course from Grand Lake to the Gulf of Mexico is known as the Lower Mermentau. The headwaters of the Mermentau's tributaries are located in the prairies of southwest Louisiana. Studies of particular tributary drainage basins, such as the Bayou Mallet watershed (Weinstein et al. 1979), deal with that ecologically distinct zone. The archeological studies of greater relevance to the interpretation of site 16 CM 61 primarily deal with the Chenier Plain of Calcasieu, Cameron, and Vermilion parishes (Tribble and Garrison 1982:Figure 26). Gibson (1976) provides the primary reference for archeological sites on the present bankline of the Upper Mermentau. Archeological investigations dealing with the area surrounding Grand Lake and along the course of the Lower Mermentau include the survey of the Lacassine National Wildlife Refuge, west of Grand Lake (Burden et al. 1978); the excavations at the Pierre Clement Site, on the west bank of the Lower Mermentau (Springer 1979); and the survey of bankline sites on the Calcasieu and Mermentau Rivers (Tribble and Garrison 1982).

The geomorphology of the Chenier Plain has been discussed previously; the observation of shell middens on chenier features, and the opportunity these sites provide for the study of geological

processes and of the antiquity and formation of prehistoric sites, has drawn the attention of geographers, geologists, and archeologists (Howe, Russell, and McGuirt 1935; McIntire 1958; Gagliano et al. 1982). One benefit of these studies has been documentation of the depositional nature and stratigraphic setting of chenier shell middens (Gagliano et al. 1982:26-32, 53-63), information prerequisite to archeological interpretation or reconstruction in the region. Box matrix sampling and sedimentary and stratigraphic study at the Pierre Clement Site (16 CM 47) on Little Chenier at the Lower Mermentau River (Gagliano et al. 1982), just upriver from the site under consideration here (Figure 3), has provided an especially useful analog model of refuse deposition and site formation.

The correlation of terrain features with archeological sites also has resulted in non-explanatory models of site densities and distributions. These models summarize the correlation of site location with observed resources and landforms. For example, Burden et al. (1978) found that sites in the Lacassine National Wildlife Refuge were located on elevated ground in proximity to some fresh water source. Gibson (1976) observed that sites along the course of the Upper Mermentau River tended to be located along cutbanks; he retrodicted an unspecified cultural predisposition for the use or occupation of such locales. While Burden et al. (1978:36) noted the same phenomenon, they argued that differential preservation and visibility contributed to this apparent correlation.

Time - space systematics of Southwestern Louisiana prehistory also have received attention in the recent cultural resources literature. As noted in the introduction to this chapter, such studies have applied the type-variety system, and in general they have relied on the Lower Mississippi Valley and southeastern Texas sequences as comparative baselines. The inability of either sequence to account for all aspects of the material culture of the region has led Burden et al. (1978:14), and Weinstein et al. (1979:passim), to recognize the Chenier Plain area as a cultural and geographical margin, or boundary between two centers of stylistic influence, the Lower Mississippi Valley and the Texas Coast. Aten (1983), in his classification of prehistoric ceramic sherds from the Upper Texas Coast, articulated a similar point of view. As a result, ceramic subassemblages from the region, as classified using the type-variety system, represent a melange of Texas varieties of Lower Valley types with Texas types that in large measure have not been studied adequately enough to define reliable varieties.

For example, Aten (1983), following Phillips (1970:48), argues that grog-tempered plainware throughout the region should be "handled" using the "super type" Baytown Plain, while all of the

"sandy paste plainwares of southeastern Texas (and, perhaps, southwestern Louisiana) should be arrayed under the single type Goose Creek Plain..." (Aten 1983:216-217). This classificatory inability to characterize variability within the plainware ceramic types that dominate ceramic subassemblages is particularly salient in the marginal Chenier Plain, where decorated ceramics often occur in insufficient frequencies to permit statistically reliable cross-dating.

One interesting result of lumping plainware sherds in broad type categories has been the creation of ceramic popularity curves that are "polymodal" (Aten 1983:283, 1984:79). One major type, Goose Creek Plain, persists for almost two millenia in the Southeastern Texas sequence; it presents two distinct periods of maximum popularity, well over one thousand years apart (Aten 1984:79). Although Aten (1983,1984) argues that patterns of ceramic type popularity from different subregions in Southeastern Texas resemble each other sufficiently to validate the utility of the classification, as Ford (1962) noted, ceramic seriation is based on the twin assumptions of unimodality and normality. A polymodal frequency distribution, then, may reflect either a problem in classification or an interrupted sequence. In the latter case, a cultural explanation would seem to be required, such as the temporary displacement of one group by another with a distinctive ceramic tradition, temporary influence from a foreign culture, etc.

In fact, plainwares, transitional periods, and marginal areas all are difficult to characterize using type-variety nomenclature. As a result, Gibson (1975) has argued that such stylistic comparisons obscure the reasons why the culture history of the Chenier Plain is "out-of-phase," and "chronologically and developmentally depressed" (Gibson 1975:20). Gibson's assertion that the type-variety system is non-explanatory is correct, albeit this methodology was designed to elucidate temporal and spatial patterns, rather than to define ethnic groups or to measure processes of cultural change. Gibson's (1976:52-55) preliminary definition of six ceramic plainwares in his report on archeological survey of the Upper Mermentau River represents an attempt to characterize variability in what otherwise is a monolithic classification. These were definitions, however, represented preliminary descriptive formulations without chronological or ethnic connotations.

A different kind of ceramic analysis was applied by Springer (1973,1979) to collections excavated from the Pierre Clement Site (16 CM 47) during 1971. Springer applied modal analysis (Rouse 1939, 1960, 1965), a procedure whereby significant attributes are classified successively, presumably following the procedural and conceptual modes to which the prehistoric potter adhered. As I

have pointed out elsewhere (Goodwin 1979), modal analysis was designed to permit archeological delineation of ethnicity; thus, it attempts to provide an emic classification, in contrast to the intrinsically etic nature of the type-variety system. Following ceramic classification, modes present in each component are combined with ancillary data (e.g., non-ceramic artifacts, ecofacts, etc.), in order to provide as holistic a picture of an archeological culture as possible (Rouse 1965). Springer's analyses of Pierre Clement Site materials, however, stopped short of the definition of cultural or ethnic units. Rather, Springer (1973, 1979) ultimately resorted to the standard Lower Mississippi Valley sequence in his discussions of chronology and cultural affiliation. Springer succeeded in demonstrating that ceramic attributes, or combinations of attributes in modes, provide more information on ceramic variability than do types. Furthermore, type-variety designations can be ascribed ex post facto to the collections Springer studied, using the data he provided. Attributes or modes, on the other hand, which may be useful in studies of ceramic variability, cannot be gleaned from type-variety tables.

Settlement and subsistence studies have been rare in Southwestern Louisiana archeology. However, because survey level cultural resources studies provide data on the distribution of prehistoric sites, the rudiments of a settlement pattern are beginning to appear, even though explanation of a pattern is totally undeveloped at this date. As noted above, a number of reports have attempted to correlate landforms and terrain features with site distributions and densities (e.g., Burden et al. 1978; Weinstein et al. 1979; Tribble and Garrison 1982), in order to predict high probability areas for aboriginal settlement. In addition, the ages of Holocene geologic features have been used as a sort of terminus post quem for cultural components; archeological and geological cross-dating are used to verify sequences (Gagliano et al. 1975), as well as to retrodict the former presence of such key environmental parameters as fresh water (Weinstein et al. 1979:6-1 et seq.). Such studies provide information on the distribution of sites across the landscape, by identifying the availability and locations of land surfaces for aboriginal settlement. In behavioral terms, however, such studies have succeeded only in demonstrating that preferred loci for aboriginal settlement and activity are likely to have been elevated above the marsh, that they had some access to fresh water, and that they were proximal to food resources.

The most cogently reasoned discussion of settlement patterns in the region containing 16 CM 61 remains that of Gibson (1975). Using a series of pairwise comparisons, Gibson (1975:81-92) postulated that Rangia cuneata gathering sites, or sites which emphasized Rangia collection along the Upper Mermentau River, were

established without consistent regard for vegetation communities or streambank position. Sites along the courses of the Upper Mermentau and its tributaries, above the limits of Rangia distributions, tended to be located in dry hardwood communities, along the cutbanks (Gibson 1975:88). These data, along with ethnographic information on the historic Attakapas, led Gibson to conclude that the marsh sites on the Mermentau River, between Lake Arthur and Grand Lake, probably represent small, family-specific, Spring and Summer seasonal camps of the prehistoric Attakapas (Gibson 1975:90). Gibson believes that the food potential of dry mixed hardwood forests is greatest during Fall and Winter, when nuts and acorns are plentiful and hunter success is enhanced. Because of differences in material culture, and due to disparate settlement patterns along the course of the Mermentau River, upriver and downriver from Lake Arthur, Gibson also retrodicted the existence of a distinctive, relatively settled, year-round occupation on the Upper Mermentau and its tributaries, upriver from Lake Arthur. Gibson's survey of bankline sites does not provide a complete picture of site distribution within the marsh zone of the coastal Chenier Plain, but presents evidence for a multi-base strategy for resource exploitation. His proposed pattern of seasonal site utilization within the Upper Mermentau region can be tested by the presence of seasonally specific food resources. The applicability of Gibson's hypothesized seasonal strategy to archeological sites in the ecologically less diverse Lower Mermentau region, between Grand Lake and the Gulf of Mexico, must be tested through the identification of locally available food resources and prediction of those patterns of remains correlated with various exploitation strategies.

Because of the paucity of excavated and documented faunal and floral subassemblages, prehistoric subsistence patterns in the region are understood superficially. Again, Gibson's (1975) short report on archeological survey in the Upper Mermentau contains the most thorough discussion of resource potential; mammalian population densities are suggested, Rangia densities are discussed, and species lists are provided for each site tested. Springer's report on the Pierre Clement Site (1973, 1979) also provides species lists, and minimum numbers of individuals.

One of the key issues in subsistence studies in the region has been characterization of patterns of seasonal transhumance in resource procurement, a subject introduced previously with regards to the historic Attakapas. More complete discussion of this topic is available in the literature on Southeastern Texas (Aten 1983, 1984). This has resulted, in part, from Aten's work with Rangia cuneata fisheries, and from his hypothetical reconstruction of Akokisa lifeways. Because the issue of seasonality is directly related to archeological study of 16 CM 61, discussion of seasonal exploitation of Rangia fisheries will be

postponed (see Chapter V). However, seasonal economic rounds, as opposed to sedentary and year-round village life, is an important characteristic of Southwestern Louisiana prehistory that distinguishes this region from the Lower Mississippi Valley. Ethnohistoric data, as well as archeological site distributions, suggest that Louisiana Attakapas groups never emphasized horticulture in their subsistence pattern. Ultimately, it will be necessary to explain the retention of an essentially Archaic subsistence pattern in both environmental and cultural terms.

As noted earlier, Gibson (1978) already has argued that the Atchafalaya Basin served as a natural barrier to the westward diffusion of agriculture during the Coles Creek period. A sequellae of acceptance of such an argument would be that Attakapas groups borrowed Lower Mississippi Valley ceramics without adopting the economic complex that prompted the population growth and expansion that brought Coles Creek period peoples to the western frontier. I think that unlikely, because agriculture is a much more powerful idea than check-stamped decoration on pots, for example. Rather, resistance to agriculture, it seems to me, is likely only after some environmental constraint was realized during a period of experimentation with the new economy. Concomitantly, it might be expected that maximum acceptance of new modes of ceramic manufacture (e.g., grog-tempered Baytown Plain) and decoration would occur during the initial period of adoption of a new economic base, and that the failure of such an experiment might prompt rejection of the diffused ceramic complex in favor of the antecedent and autochthonous complex. In this light, if Aten's (1983, 1984) seriation chronology for Southeastern Texas ceramics has the validity he claims, the advent of the second period of Goose Creek Plain's maximum popularity might delimit the end of experimentation with agriculture, following discovery of environmental limitations (Meggers 1954). To test such a model, components dominated by varieties of Lower Valley ceramic types could be identified and studied applying paleobotanical techniques. Earlier and later components, during periods of maximum popularity of Goose Creek Plain ceramics, likewise could be studied using some combination of palynological, macrobotanical, and phytolith techniques. It would be expected that the intermediate assemblage, probably dominated by Baytown Plain grog-tempered ceramics, would provide evidence of horticulture or agriculture, while the earlier and later assemblages would yield evidence of wild plant exploitation, rather than domesticated floral species.

Summary

In the preceding section, the general chronological framework for the prehistory of Southwestern Louisiana has been summarized, and recent archeological investigations in the region

have been reviewed critically. The point of this discussion is that relatively little is known about any single aspect of the regional prehistory, and that archeological study there has not yet achieved viable definitions of cultural complexes or of settlement and subsistence patterns, much less explanations of cultural change. I have suggested that progress beyond the descriptive level has been hampered by a lack of systematic investigations and by a reductionist tool kit that obscures the nature and variability of prehistoric cultural manifestations in the region. At the same time, it should be noted that basic description of prehistoric components in the area is a relatively new development, and that some of those descriptions (Gagliano et al. 1982) have provided extremely useful baseline information on the formation and setting of archeological sites.

Two authors have provided models that hold promise for future archeological testing in the region. Gibson (1975) has focused on the parameters of key environmental regimes as they relate to site locations; Aten (1984) has presented a useful model of demographic change for late prehistory and the early historic period in Southeastern Texas that may be tested in Southwestern Louisiana. In the preceding paragraphs, I have suggested the outline of a developmental model that, if refined, might be used to attempt explanation of patterns of change in material culture and in subsistence regimes during later prehistory.

Clearly, the archeology of Southwest Louisiana is a fertile ground for the study of cultural process, as well as chronology. The aforementioned opportunities for the study of prehistory in the region, as well as major gaps that have been identified in contemporary knowledge, provide a framework for interpreting the potential of the site 16 CM 61 to contribute to archeological understanding of the region.

CHAPTER IV

FIELD INVESTIGATIONS AT 16 CM 61

Introduction

Archeological field investigations at 16 CM 61, conducted in October and December, 1985, were designed to provide information pertaining to the contextual integrity of the site, and to supply data to be used in analyses and subsequent assessment of research potential applying the National Register criteria (36 CFR 60.4). Specific research objectives for this study were derived from three sources: Louisiana's Comprehensive Archeological Plan (Smith et al. 1983), the scope of work for this project provided by the New Orleans District, Corps of Engineers, and the critical review of the literature discussed above. In addition, field work was designed to verify previous observations of the site 16 CM 61 included in the report on archeological survey of the Mermentau River, Louisiana Project (Tribble and Garrison 1982).

Louisiana's Comprehensive Archeological Plan (Smith et al. 1983) lists three general themes pertinent to the research potential of 16 CM 61: Southwest Louisiana and its interaction with Eastern Texas; the archeology of the cheniers; and, prehistoric coastal subsistence and settlement patterns. In addition, the New Orleans District delineated shellfish type and variability, shellfish as indicators of cultural ecology and environmental change, and intersite comparisons with nearby shell middens as salient research topics. Because of the importance of seasonal transhumance to study of settlement and subsistence patterns in the region, the recovery of faunal remains for seasonality determinations also was a primary objective of field work.

Field methods were designed to permit characterization of the horizontal and vertical extent of the site, its surface topography, and its contextual integrity. In addition, field work was designed to provide information on the stratigraphy, chronological position, and archeological content of 16 CM 61. Excavation in 1985 was limited to auger and shovel testing, and excavation of three 1 x 2 meter test units. Samples of artifactual and organic remains were acquired for laboratory analysis. In the following discussion, recent field work at 16 CM 61 is reviewed, and the site specific archeological milieu is described. This discussion begins with a brief review of the 1980 investigations that resulted in a recommendation of significance for the site (Tribble and Garrison 1982).

The 1980 Investigations

Archeological survey of the Lower Mermentau River was undertaken in 1980 by the Cultural Resources Laboratory of Texas A&M University. At that time, the site was described as:

(an) ancient beach ridge now completely surrounded by marsh land. The site area is quite small although it extended around the point of land formed by the small bayou on the southern aspect of the site. On the river side of the site extends roughly 31 m with 3 m between the water's edge and the foot of the present containment dike (sic; Tribble and Garrison 1982:102).

Although photographs of the site were taken in 1980, no topographic or sketch map was provided.

Tribble and Garrison (1982:102) note that in 1980 "a line of shovel tests were dug along a 20 m axis parallel to the small beach" (sic), although the number of tests in this line is not clear. Only two shovel tests are enumerated in the report, and only two tests roughly five meters apart are located on the accompanying photographic site plan (Tribble and Garrison 1982:102,113). These two tests appear to have produced twenty-five ceramic sherds; stratigraphic profiles of the 1980 tests (Tribble and Garrison 1982:120) are not drawn to scale. Thus, the number, extent, and location of test excavations conducted in 1980 is somewhat problematic. A general surface collection also was made in 1980.

The 1982 report ascribes a Coles Creek period placement to 16 CM 61, based on examination of 185 ceramic sherds collected from the site surface (Tribble and Garrison 1982:143). This report also describes the site as a Mullinea shell midden, with a basal (60 - 70 cm below surface) mixed Mullinea and oyster shell component. The 1985 investigations showed that the primary constituent of the midden was Rangia cuneata. The stratigraphy of 16 CM 61 documented during the current research effort does not resemble the profiles included in the 1982 report.

Tribble and Garrison (1982:102) concluded that 16 CM 61 was significant because it had "identifiable cultural components, preserved faunal and floral remains, and environmental indicators such as associated soils and shellfish." Preservation of floral remains appears to have been an assumption, since no macrobotanical data were presented in the report. Erosion due to wave wash along the exposed site bankline on the Mermentau River was the primary impact observed during the 1980 field work.

The 1985 Investigations

Field work at 16 CM 61 during 1985 had four basic components: preparation of a site plan and topographic map, controlled surface collection along exposed areas parallel to the river, shovel and auger testing, and test excavation of three 1 x 2 m units. The 1985 testing program was conducted in two stages, during October and December. Two factors necessitated a hiatus in field work: temporary suspension by the landowners, Mermentau Mineral and Land Co., Inc., of right of entry during hunting season, and Hurricane Juan. Floodwaters from Hurricane Juan, which reached their peak flood stage on November 4, 1985, completely inundated the site, precluding completion of field work prior to the November 9, 1985, commencement of hunting season. Right of entry subsequently was renewed for the period between the end of the first and the beginning of the second hunting seasons.

The 1985 field investigations began on October 21st, with a preliminary reconnaissance and establishment of an archeological datum. Access to the site was by boat through Mud Lake; riverborne inspection of adjacent exposed banklines was undertaken as an adjunct to preliminary reconnaissance. As noted in Chapter II, the site 16 CM 61 is located near the edge of Chenier Perdue Ridge, on the west (right descending) bank of the Lower Mermentau River (Figure 2). About thirty meters of linear shell deposits are visible along the bankline in this location. Vegetation in the site area consists of mixed brush and pasture (Figure 5); part of the area is used today for grazing cattle.

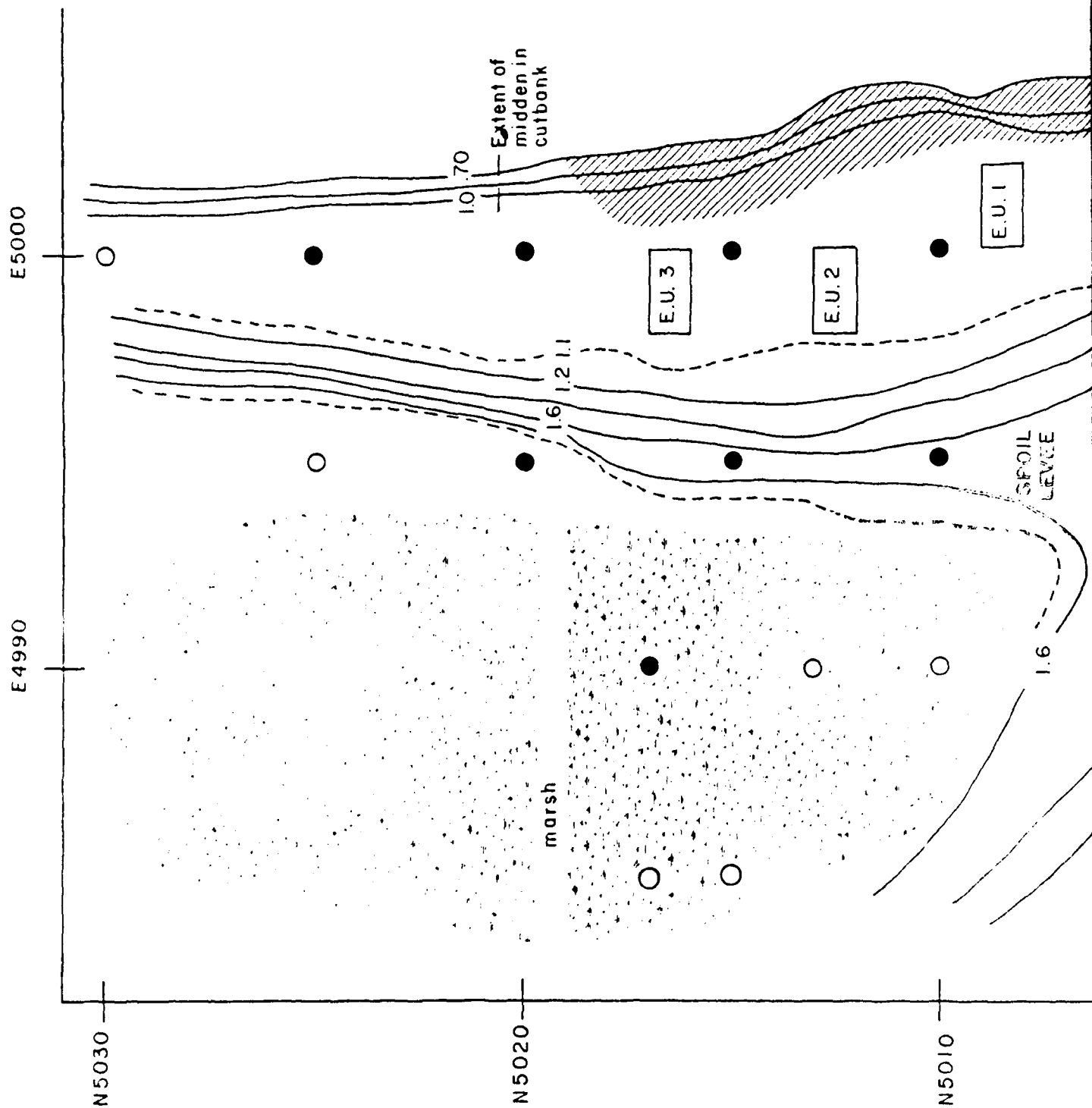
The site is located on a small peninsula formed by a canal at its southern extent, and by the Mermentau River. A smaller ditch is located north of the site area. An earthen spoil embankment is present along the northern side of the canal or small bayou at the southern perimeter of the site; a low containment dike of earthen dredge spoil is present parallel to the river, and landward of the shell beach (Figure 6). The elevated areas within the vicinity of 16 CM 61 are modern artificial features. The description of the site area as part of Chenier Perdue Ridge (Tribble and Garrison 1982) apparently was based on the identification of these man-made features with the original land surface. Preliminary investigations showed that part of the former site area east and southeast of the present site has been lost to dredging and erosion. Beach deposits were observed to have been wave-washed.

The Auger Test Regime

Following establishment of a site datum (designated N5000, E5000), and of an archeological control grid, a systematic auger and shovel test regime was implemented in order to establish the extent and depth of cultural deposits. A total of thirty-one



Figure 5. View of 16 CM 61 showing the peninsular tip of the site area.



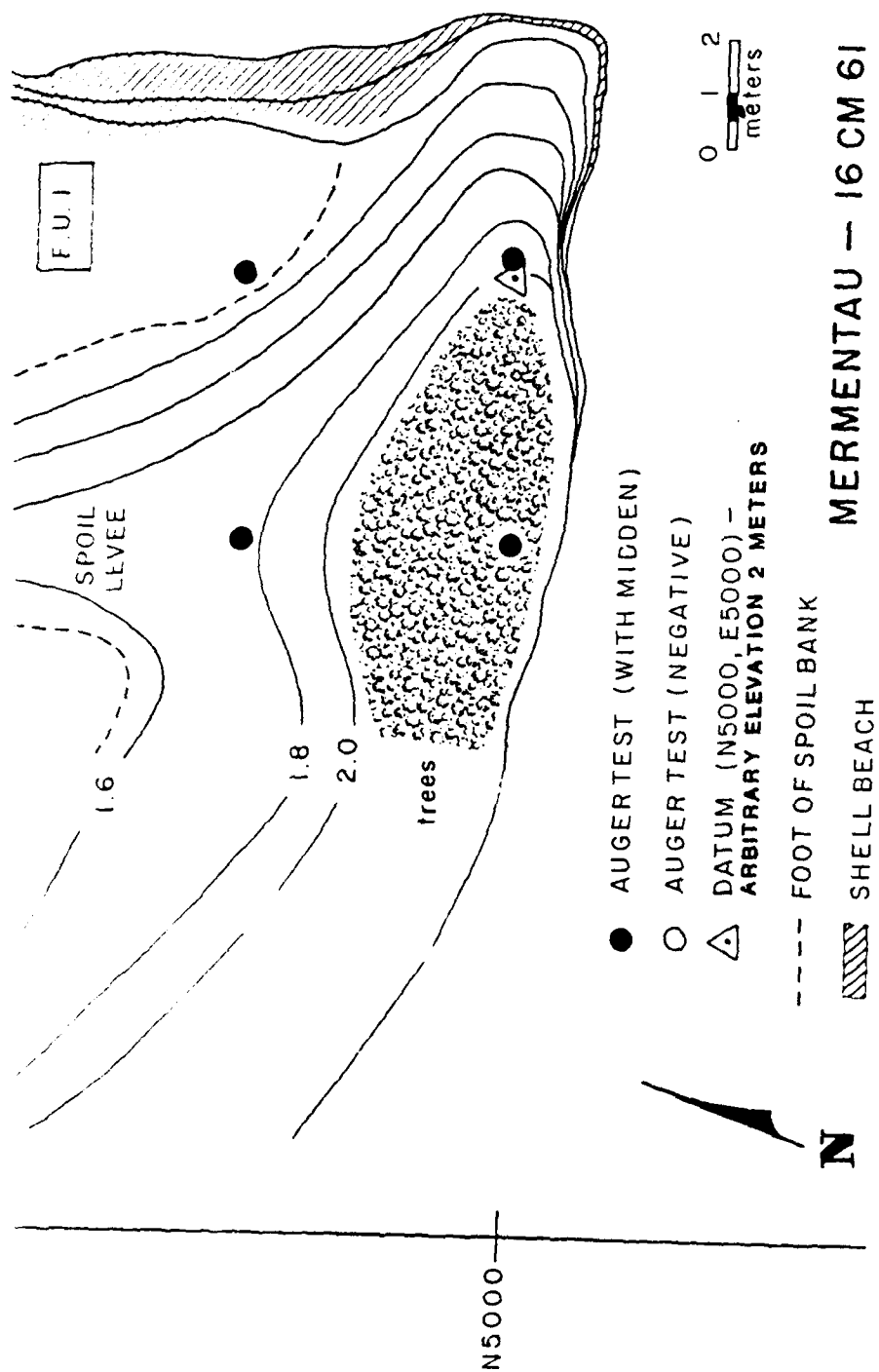


Figure 6. Site plan of 16 CM 61 showing location of excavation units.

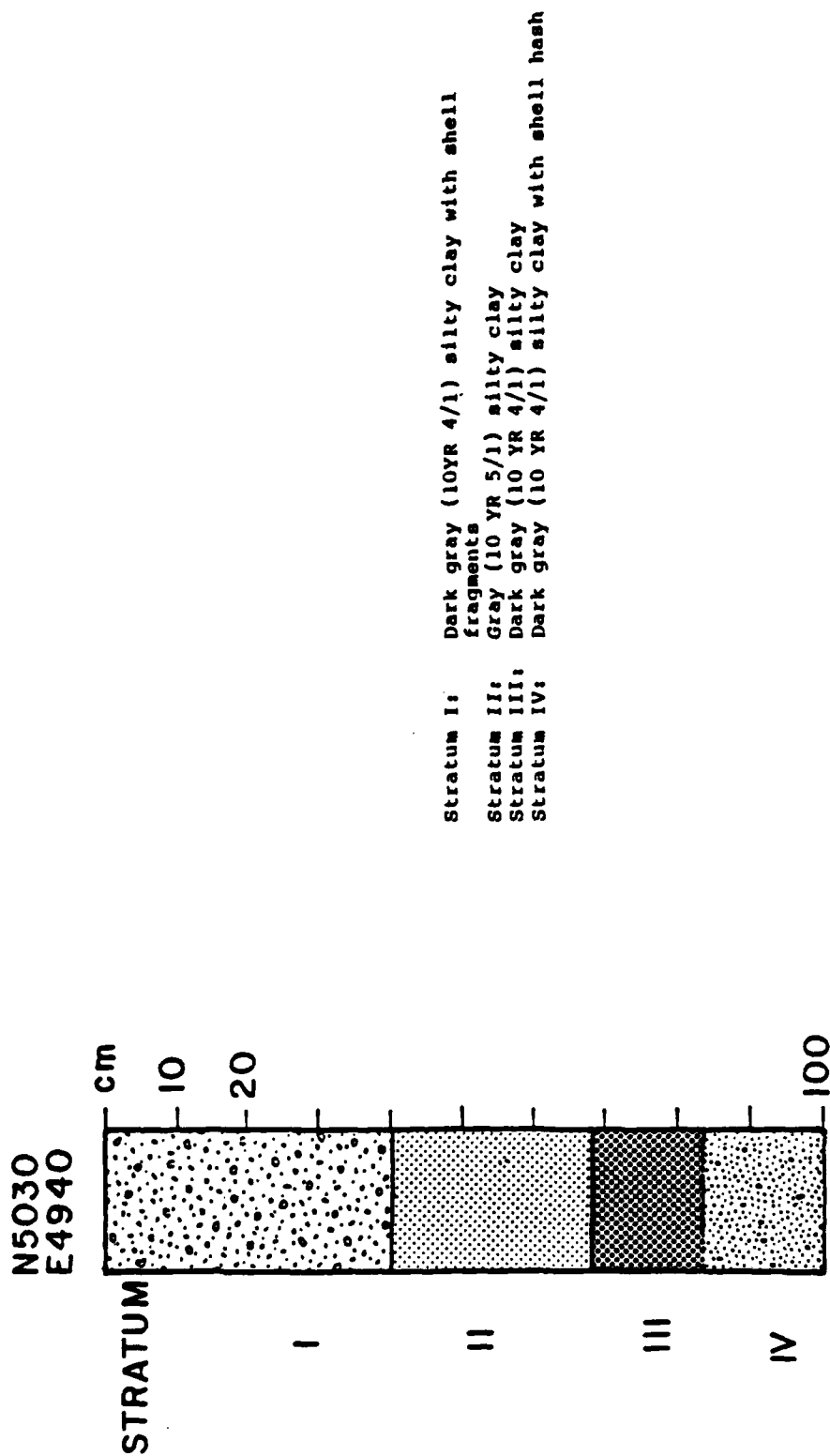
tests were excavated; most of these were aligned at fifteen meter increments across the locality, although several auger tests were placed in intervening areas to demarcate the extent of midden deposits. Shovel tests were confined to areas north (grid) of the exposed beach deposit, and west (grid) of the spoil containment dike. Auger tests were excavated to sterile basal subsoil, and profiles were prepared. Twelve auger tests revealed buried midden deposits; in situ cultural remains at the site consisted of a band of dense Rangia midden that extended about thirty meters north to south (grid), parallel to the course of the Mermentau River, and that was about twelve meters wide (grid east-west; see Figure 6). These data indicate a present site area of 350 to 400 square meters.

In addition, one auger test, at N5017, E4990, revealed Rangia shells; this test was located west of major concentrations of remains representing the primary midden deposit (Figure 6). Nearby auger tests, at N5017, E4985, and N5013, E4990, were negative for cultural remains. The test at N5017, E4990, then, indicates a small western extension of the site.

Three auger test profiles (Figures 7, 8, and 9) illustrate the stratigraphic milieu recorded during this stage of research. These profiles represent three stratigraphic settings observed during fieldwork; one of these is outside of the site area, and lacks cultural remains; one extends along the bankline, where erosional processes have exposed the midden deposit on the surface of the site; and, one shows the deeper cultural stratigraphy created through the placement of modern dredge spoil atop the site area. The first (Figure 7), at N5030, E4940, both north and west of the site area probatively reconstructed here (Figure 6), presents three strata of dark gray and gray silty clays, overlying a mixed silt and shell hash stratum which may represent the surface of a buried chenier deposit at this locale.

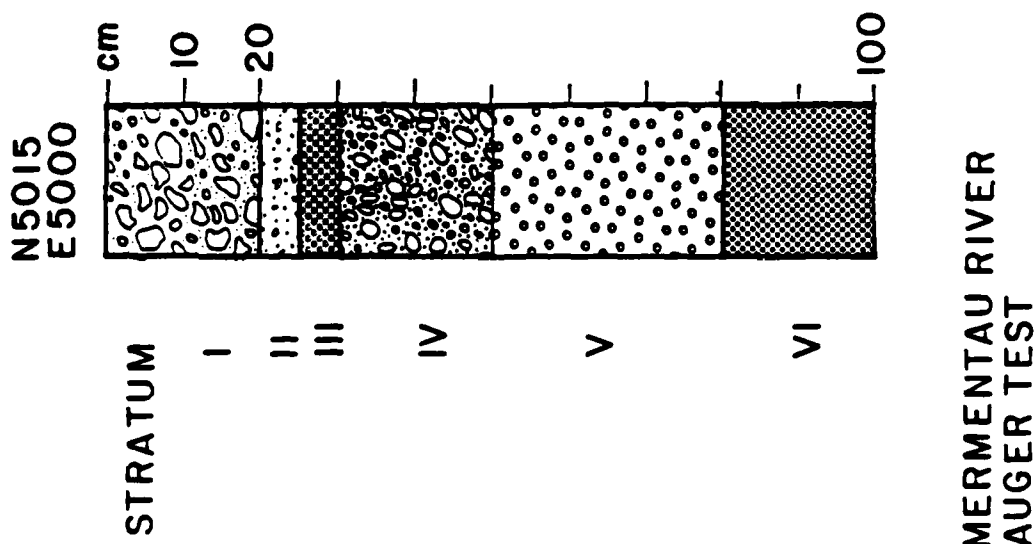
The auger test profile for the unit at N5015, E5000, adjacent to the exposed shell beach on the bank of the river (Figures 6 and 8), presents a sequence of bedded Rangia midden deposits overlying a sterile very dark gray (10 YR 3/1) silty clay substratum. In this test, the midden was exposed in the uppermost stratum; underlying strata varied in matrix color, in the amounts of ash present, and in the condition of shellfish remains. As Figure 8 illustrates, shells in Stratum II primarily were crushed, while Strata III and IV contained both whole valves and crushed shell. Although Rangia shells dominated fauna from Stratum V, a few oyster shells also were present.

The auger test profile adjacent to the site datum (N5000, E5000) illustrates the greater depth of observed midden where the surface topography has been elevated by recent dredge spoil



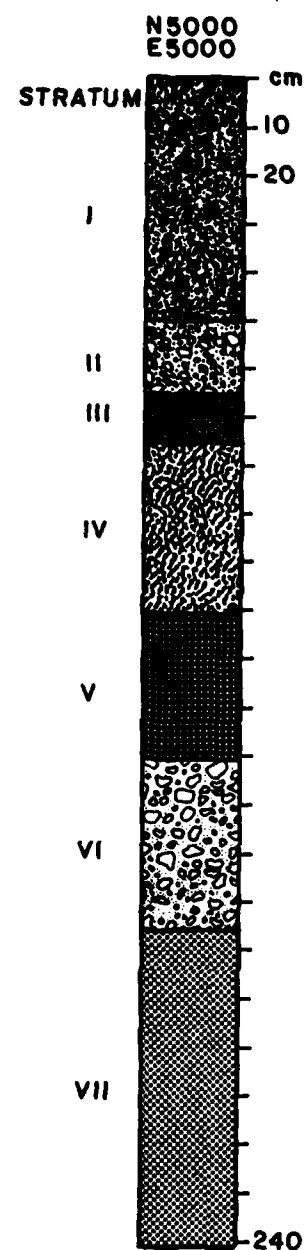
MERMENTAU RIVER
AUGER TEST

Figure 7. Stratigraphic Profile of Auger Test at
N5030, E4940, Outside of Site Area.



Stratum I: Rangia shell midden in black (10 YR 2/1) silty clay matrix
 Stratum II: Light gray (10 YR 6/1) clayey sand with crushed shell
 Stratum III: Rangia shell midden in very dark gray (10 YR 3/1) silty clay matrix
 Stratum IV: Rangia shell midden in black (10 YR 2/1) silty clay matrix
 Stratum V: Black (10 YR 2/1) silty clay with Rangia shells
 Stratum VI: Very dark gray (10 YR 3/1) silty clay

Figure 8. Stratigraphic Profile of Auger Test at N5015, E5000, Showing Interbedded Shell Midden Deposits.



**MERMENTAU RIVER
AUGER TEST**

**Figure 9. Stratigraphic Profile of Auger Test at
N5000, E5000, Showing Spoil Deposit
Overburden Above Midden Deposits.**

Figure 9. Continued

- Stratum I: Very dark gray (10 YR 3/1) clay; gar scales at surface
- Stratum II: Rangia shell midden in very dark gray clay matrix
- Stratum III: Dark gray (10 YR 4/1) silty clay with Rangia shells
- Stratum IV: Very dark gray (10 YR 3/1) clay with Rangia shells and gar scales
- Stratum V: Dark gray (10 YR 4/1) clay with gar scales
- Stratum VI: Rangia shell midden in black (10 YR 2/1) silty clay matrix
- Stratum VII: Very dark gray (7.5 YR 3/0) silty clay

activities. In this test, the 50 cm deep uppermost stratum comprised a very dark gray (10 YR 3/1) silty clay overburden; modern gar fish scales were present on the surface. Strata II and III represent low density Rangia midden deposits that were distinguished on the basis of the nature and color of soil matrices (Figure 9). Stratum IV, a 35 cm thick midden lens, evidenced even less Rangia refuse than the strata above it; Stratum V lacked Rangia shells, although gar scales were recovered from this horizon. The water table was encountered at basal Stratum V, at a depth of 140 cm below surface. Stratum VI produced Rangia midden, in a plastic black (10 YR 2/1) silty clay matrix; Stratum VII represents culturally sterile subsoil.

In general, stratigraphic data collected during auger testing at 16 CM 61 conform closely to the profile described by Gagliano et al. (1982:28-29, 60-62) for the Pierre Clement Site (16 CM 47) on Little Chenier, just upriver from the current project area. Midden deposits at both sites consist of bedded strata of Rangia shells distinguished by varying densities of remains, by the condition of the remains, and by the nature of interstitial soil matrices. At 16 CM 47, cultural deposits overlies reworked shell hash mixed with brown sand, characteristic of chenier deposits. Auger tests at 16 CM 61 encountered some areas of shell hash (Figure 7), but no sandy strata. The midden areas at 16 CM 61 overlies silty clay strata, probably deposited in the vicinity of a beach ridge. Site 16 CM 61 may be associated with buried beach or accretion ridges of Chenier Perdue Ridge, but no such subsurface features have been identified. The primary difference between the upper strata exposed in augers tests at 16 CM 61 and the "Category B" profile defined by Gagliano et al. (1982), in their study of Gulf coastal archeological sedimentology, is the presence in portions of this site of a dense spoil overburden. The stratigraphy of 16 CM 61 otherwise is unremarkable; multiple episodes of site use and refuse disposal are indicated, as are varying intensities of human activity (viz Gagliano et al. 1982:62-63).

Surface Collection and Observations

Following completion of auger testing at 16 CM 61, and the probative reconstruction of the horizontal extent of the site, controlled surface collection was undertaken. However, the aforementioned recent spoil disposal and the density of vegetation on site limited the efficacy of this technique to the exposed beach surface along the Mermentau River. As will be seen, surface collection along the bankline and beach in five meter square quadrats provided a very limited collection of ceramic sherds; modern riverborne debris was not collected.

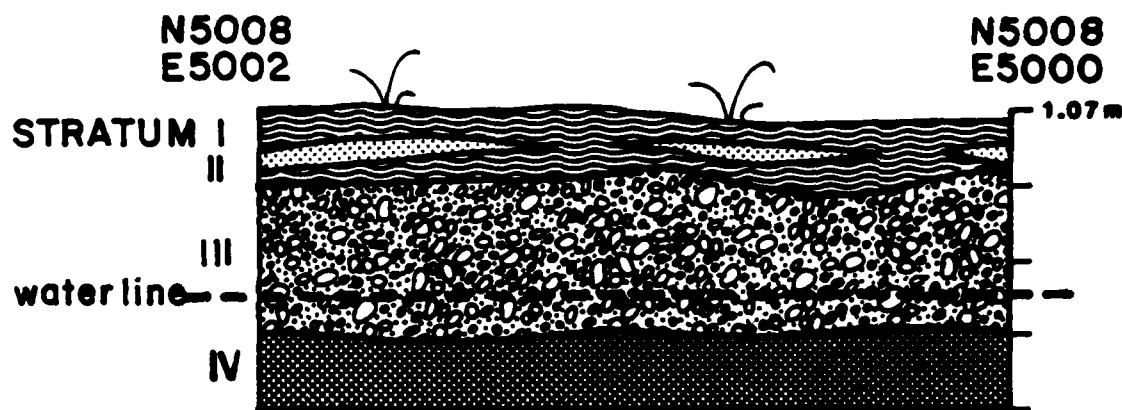
Because the site was revisited after flood waters from

Hurricane Juan had receded, several observations could be made about beach deposits and erosional processes. Both before and after the hurricane, vessel traffic and attendant wave wash were light. An average of about six small watercraft and one pushboat with a barge were observed daily. After the hurricane, however, a previously unrecognized narrow band of dark midden was exposed along the beach; potsherds were embedded in the midden, which was densest between N5011 and N5014, along the bankline. This midden deposit resembled those recorded as Stratum III in the second auger test discussed above and in the following excavation unit profiles. It appears that intermittent deflation of midden deposits follows major flood episodes, and that wave wash subsequently is responsible for reworking of exposed deposits.

Excavation Units

As soon as surface collection was completed, three locales for test excavation were selected in areas of the site where deep spoil deposits were absent and where buried midden deposits had been documented in auger tests. The stratigraphic setting revealed in adjacent auger tests was used to control excavation, which followed the natural stratigraphy. Fifteen liter matrix samples of all strata exposed during test unit excavation were collected for laboratory analysis, with the exception of sterile overburden deposits. In addition, all other dirt and midden excavated from the three test units was water-screened by hand on the site, using 1/4" hardware cloth; water screening was conducted by agitating the screens in the Mermentau River. The objectives of this testing effort were described above; matrix sample acquisition was undertaken to permit recovery of remains smaller than the screen mesh used in the field, such as some fish otoliths, and to enable water separation of other organic remains in the laboratory. Samples of Rangia cuneata shells were collected from Excavation Unit 2, Strata IIIB and IIIC, for radiocarbon dating. Charcoal collected from this unit was insufficient for dating.

A profile view of Excavation Unit 1 is shown in Figure 10. This unit, at N5008-5009, E5000-5002 (Figure 6), was capped by a very dark brown (10 YR 2/2) silty clay overburden interbedded with a silty clay loam. Stratum II, which comprised a distinct lens within the overburden zone, consisted of a grayish brown (10 YR 5/2) clay deriving from spoil run off from the earthen containment levee onto the site (Figure 10). This "bleeding" from spoil located just west of the unit created a discontinuous band of plastic clay within the sterile topsoil. Stratum III comprised a continuous dense Rangia midden, in a very dark gray (10 YR 3/1) silty clay matrix. The 164 prehistoric ceramic sherds collected from this stratum comprise the largest ceramic sample from any single provenience unit excavated during the 1985 field season. In addition to the dense Rangia deposit, fish bones, otoliths, and



MERMENTAU RIVER
16 CM 61

STRATIGRAPHIC PROFILE
SOUTH WALL, EXCAVATION UNIT ONE

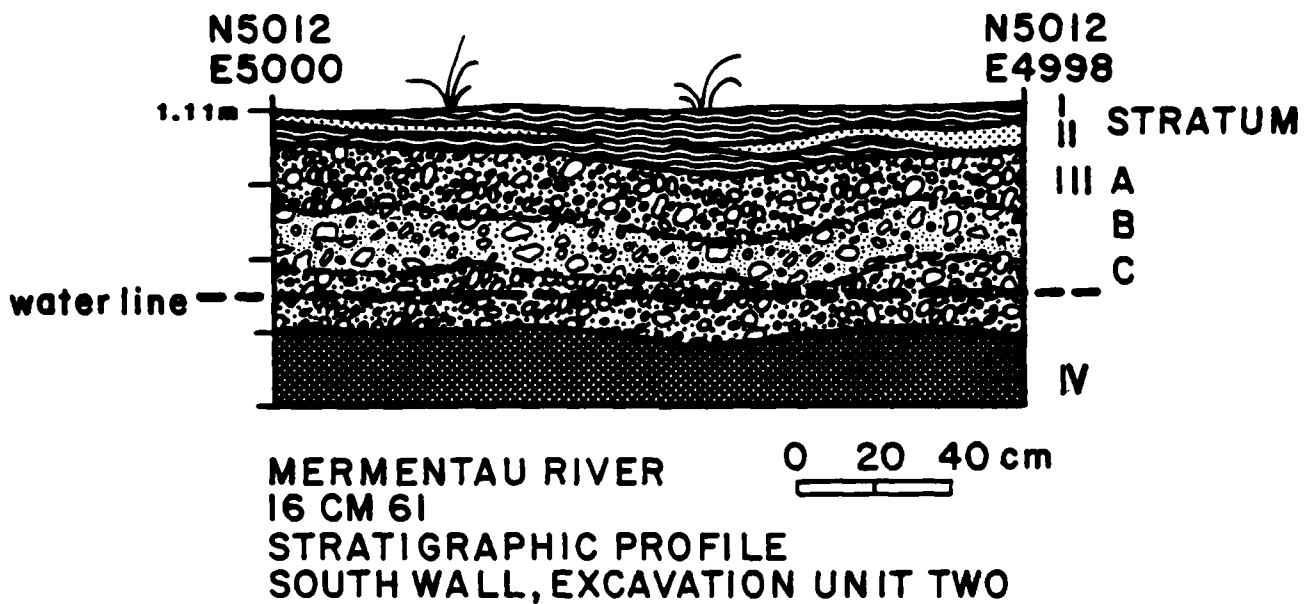
- Stratum I: Very dark brown (10 YR 2/2) silty clay and silty clay loam overburden
- Stratum II: Grayish brown (10 YR 5/2) clay (spoil run off)
- Stratum III: Dense Rangia midden in very dark gray (10 YR 3/1) silty clay matrix
- Stratum IV: Very dark gray (7.5 YR 3/0) clay

Figure 10. Stratigraphic Profile of Excavation Unit 1, South Wall, 16 CM 61.

scales were recovered, as were mink and muskrat teeth. Stratum IV (Figure 10) consisted of a very dark gray (7.5 YR 3/0) plastic clay; Rangia shells and ceramic sherds were confined to the uppermost portion of this stratum, which was culturally sterile in its basal aspect.

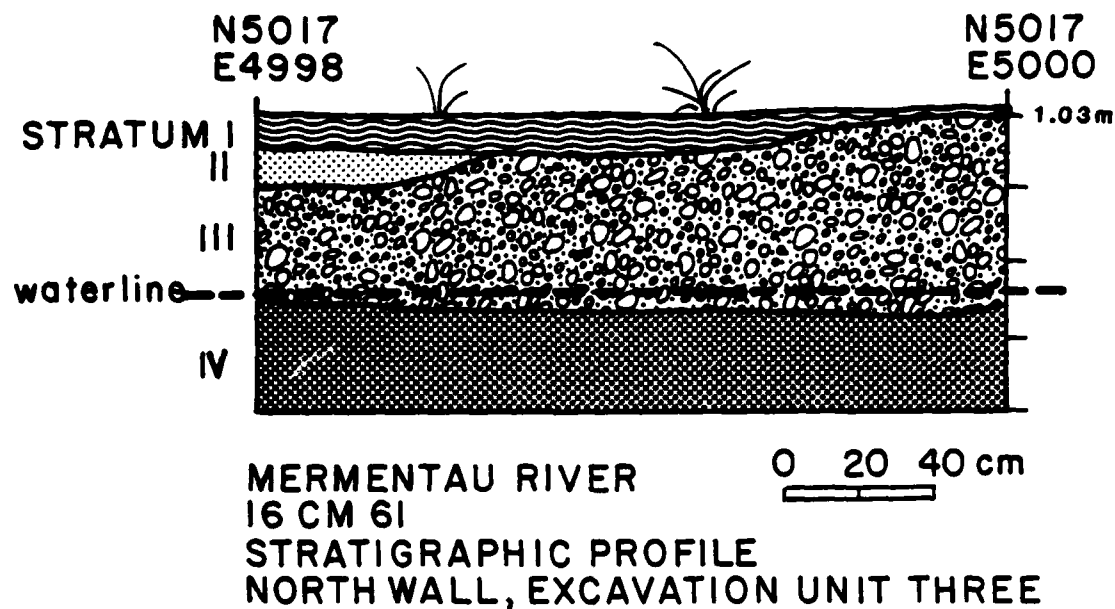
Excavation Unit 2 (N5012-5013, E4998-5000) exhibited a similar stratigraphic setting to that of EU1. As Figure 11 illustrates, Strata I and II in both of these units were homologous. However, the midden in Stratum III of Excavation Unit 2 demonstrated interbedded Rangia deposits that could be segregated into three substrata (A, B, and C), based on differential densities of ecofactual and artifactual remains. The use of substrata, as opposed to distinct strata designations, was based on the fact that the matrix throughout this stratum consisted of the same very dark gray (10 YR 3/1) silty clay loam. Shell and artifact densities varies between the substrata: prehistoric ceramic sherds were absent in substratum A, a dense Rangia deposit, while sherds were relatively abundant (n=59) in substratum C, which produced markedly fewer clam shells. Fish remains were relatively common in substratum A, rare in B, and absent in C. Several nails and metal fragments had intruded into Stratum III in this unit, as well; the nature of the disturbance that introduced these later materials was not discerned in the field. The few clam shells (Rangia MNI=10) present in the basal Stratum IV in this unit (Figure 11) were confined to its interface with Stratum III; no artifacts were present in Stratum IV.

As Figure 12 illustrates, the clay lens (Stratum II) attributed to spoil run off was limited to the western end of the overburden in Excavation Unit 3 (N5016-5017, E4998-5000). Overburden deposits tapered to 2 cm at the eastern wall of the unit, making the midden stratum virtually a surface phenomenon in this locale. The underlying Rangia midden in this unit, Stratum III, resembled closely the dense clam shell midden in a very dark gray (10 YR 3/1) silty clay matrix that was recorded in Excavation Unit 1. However, the vertical extent of the midden deposit in Unit 3 decreased from east to west; the profile (Figure 12) indicates either more intensive deposition of shells on the river side of the unit, or deflation of the midden away from the riverbank. Besides numerous Rangia shells, this midden stratum produced several alligator teeth, fish otoliths, and the widest diversity of fish species represented in any provenience at the site. Ceramic sherds were not abundant. Scattered oyster shells were present between 40 and 50 cm below surface. A composite stratigraphic profile through site 16 CM 61, from the spoil retention dike near the western limit of the site to the water's edge at the eastern limit of the site, is shown in Figure 13. The composite profile follows the west-east gridline along N5010. The composite profile is based on the profiles in nearby Excavation Units 1 and 2,



- Stratum I: Very dark brown (10 YR 2/2) silty clay and silty clay loam overburden
- Stratum II: Grayish brown (10 YR 5/2) clay (spoil deposited)
- Stratum III: Very dark gray (10 YR 3/1) silty clay loam matrix containing interbedded shell midden deposits (Substrata A, B, and C)
- Stratum IV: Very dark gray (7.5 YR 3/0) clay

Figure 11. Stratigraphic Profile of Excavation Unit 2, South Wall, 16 CM 61.



- Stratum I: Very dark brown (10 YR 2/2) silty clay
- Stratum II: Grayish brown (10 YR 5/2) clay (spoil deposited)
- Stratum III: Dense Rangia midden in a Very dark gray (10 YR 3/1) silty clay
- Stratum IV: Very dark gray (10 YR 3/1) clay

Figure 12. Stratigraphic Profile of Excavation Unit 3, North Wall, 16 CM 61.

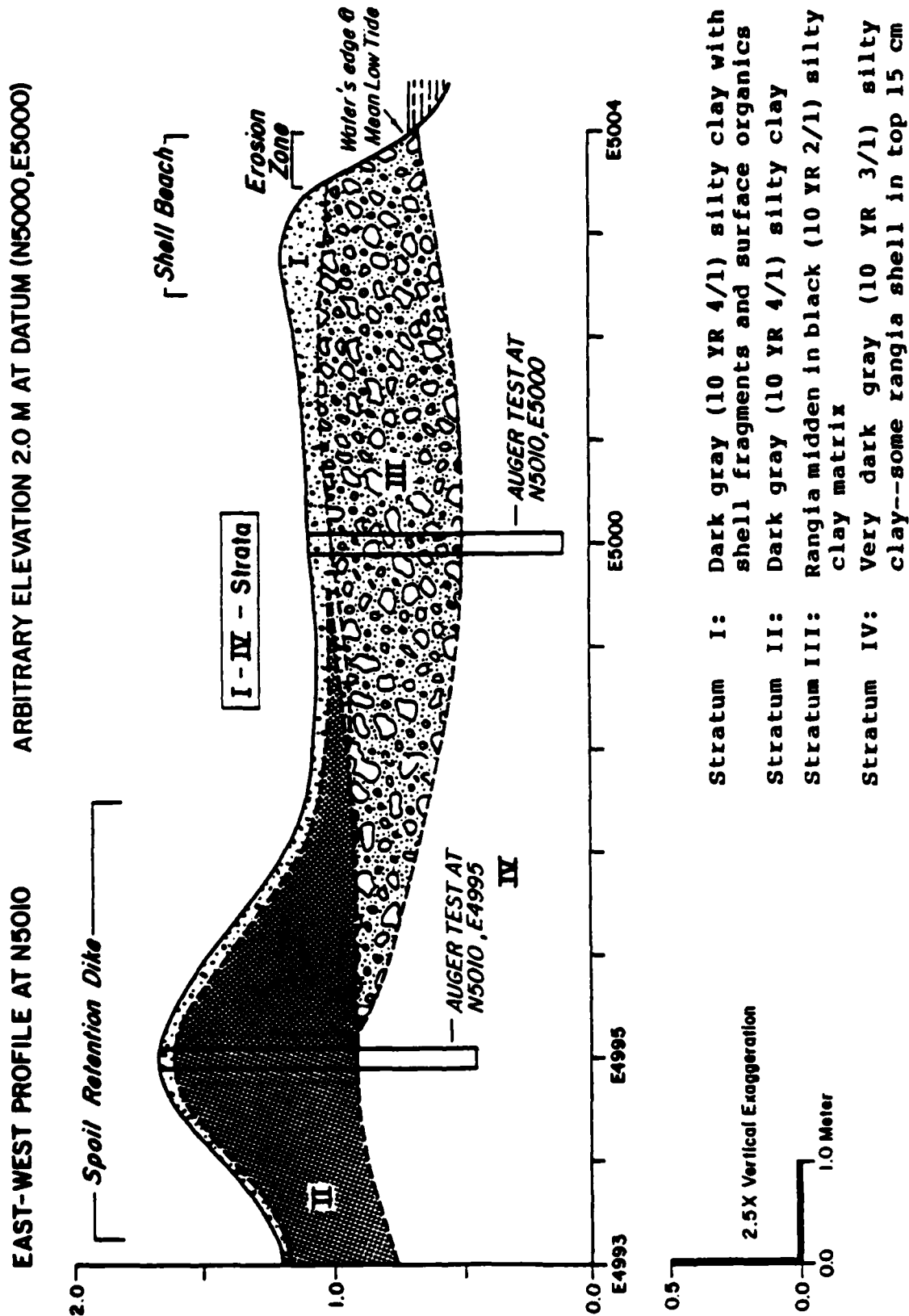


Figure 13. Hypothetical stratigraphic Cross-Section at 16 CM 61, from retention dike to the Mermentau River.

and on the stratigraphy encountered in auger tests at N5010, E4995 and N5010, E5000. The top and bottom of the Rangia shell midden can be interpolated for the composite profile, but finer stratigraphic divisions within the midden cannot be reliably indicated.

Discussion

In conjunction with topographic mapping of the site area, surface and subsurface observations at 16 CM 61 permit characterization of its archeological deposits. First, the site extends approximately thirty meters along the shore of the Mermentau River. Midden deposits are closer to the surface near the bankline, especially in the northern half of the site where less spoil has intruded. In situ midden is exposed in bankline profile after major floods.

Midden deposits vary in depth from surface expression along the beach to around 50 cm below surface. Rangia shells are the primary constituent of the midden; other organic remains include fish bones, turtle shell, and a few mammal bones. Alligator teeth also were found. Ceramic sherds were not plentiful; Excavation Unit 1 produced by far the largest number of potsherds. The midden deposit in Units 1 and 3 comprised a relatively undifferentiated zone of clam shells, with lesser frequencies of other classes of remains. The midden in Unit 2 demonstrated interbedded internal stratigraphy indicative of deposition in multiple episodes. Oyster shells were present in small numbers within Rangia deposits at the site; however, no discrete oyster shell midden deposits or lenses were observed, nor was any ceramic and bone horizon distinguished in profile (cf., Tribble and Garrison 1982:120). Rather, these classes of remains formed inclusions within an overwhelmingly clam shell midden deposit.

Spoil deposition has occurred along the southern portion of the site and in the form of an earthen embankment parallel to the river. Bleeding from spoil has created narrow and discontinuous lenses of plastic clay over much of the site; this clay lens does not extend to the bankline. In general, the earthen spoil embankment falls within several meters of the western (grid) perimeter of the site, although Rangia midden was encountered a short distance west of the earth embankment at N5017, E4990 (Figure 6). Areas around this midden outcrop were devoid of cultural remains. Thus, the site appears to comprise an area of about 350 - 400 square meters.

Current major destruction processes appear to be limited to erosion; gradual erosion is indicated, except following major floods. The profile of Unit 3, however, may indicate that erosion and water action have caused some compaction and degradation of

midden. Dredging of the waterway at the southern end of the site has reduced the extent of cultural deposits. Conversely, spoil deposition along the southern perimeter of 16 CM 61 has created a relatively thick cap of silty clay over remaining midden there. As will be seen in the subsequent section of this report, the artifact assemblage from this site indicates that substantial contextual integrity may remain in undisturbed locales.

CHAPTER V

ANALYSES AND INTERPRETATIONS

Introduction

Laboratory analyses of excavated materials from 16 CM 61 were designed to permit accurate characterization of the nature and variability of the remains, and to provide information pertaining to the research objectives outlined above. As the preceding chapter demonstrates, only limited test excavation, in the form of three 1 x 2 meter units, was undertaken during the 1985 field season. Although midden deposits at 16 CM 61 contained large numbers of Rangia shells, as well as lesser quantities of other classes of faunal remains, artifact density in these three units was relatively light. In fact, ceramics constituted the only class of aboriginal artifacts recovered during the 1985 testing program. Therefore, artifact analysis focused on classification of ceramic sherds, in order to discern the chronological placement of the site. Charcoal and shell samples were obtained for radiocarbon assay, to assist in chronological determinations.

Faunal analysis was designed to delineate the range of variability in animal foods, as well as to test the hypothesis that shell middens in the Lower Mermentau area represent seasonal shellfishing stations (Gibson 1975). Rangia shells from fifteen liter matrix samples were used in seasonality determinations; recovery techniques were designed to obtain fish otoliths, for use in the study of seasonality.

Because of the limited amount of testing undertaken, it was not expected that this research effort would resolve any major problems in the regional prehistory. Rather, analyses of excavated materials were designed to provide additional information on the integrity of the site, and to assist in the assessment of the potential of the site to contribute to archeological understanding of this poorly known and marginal area. In the following discussion, laboratory analyses of ceramics and faunal remains from the site 16 CM 61 are described. The results of these preliminary experiments with a limited data base then are reviewed with reference to the specific research objectives outlined for this project, and to the regional prehistory.

Ceramics and Chronology

The archeological study of prehistoric ceramics is relatively undeveloped in Southwestern Louisiana. As the review of the regional prehistory contained in Chapter III of this report

has shown, ceramic classification generally has involved the application of the type-variety approach in an attempt to relate collections from this area to either Lower Mississippi Valley or Southeastern Texas complexes for which more data are available. The objectives of such a procedure are primarily chronological or historical: assemblages that are similar stylistically should have similar ages or common origins, and the movement of peoples or the diffusion of cultural traits should be visible in patterns of ceramic manufacture and decoration.

For the region under consideration here, however, there are several theoretical and methodological problems to this approach. The first is that ethnohistoric data on the Attakapas show clearly that these people were different from better studied groups in the Lower Valley. They had a distinctive culture, a different settlement and subsistence pattern, and different ethnic affiliations; their lifestyle was sufficiently primitive for them to be called "man-eaters" by other Indian tribes. The application of existing type designations to ceramics from this region, then, probably has at least as much potential to obscure the nature of indigenous technology as it does for showing what aspects of more widely distributed ceramic styles were borrowed.

In fact, no single Attakapas assemblage has been defined in Southwestern Louisiana, Gibson's (1975) tentative definition of ceramic wares for the Upper Mermentau notwithstanding. Similarly, very little time depth is available for the area; the prehistoric antecedents of the historic Attakapas in Louisiana are virtually unknown. Without such basic reportage, complexes, phases, or periods are problematic. This situation is further confounded by an apparent continuity in ceramic tradition; as Aten (1983, 1984:79) has pointed out for Southeastern Texas, the sandy paste plainware type Goose Creek Plain seems to have been the dominant ceramic recipe in the region for much of the Neo-Indian epoch. When its popularity declined, it was replaced by Baytown Plain var. San Jacinto, grog-tempered ceramics that in cross section look remarkably like Goose Creek Plain sherds tempered with ground sherds of Goose Creek Plain. When Baytown Plain decreased in popularity, Goose Creek Plain again became the dominant ware.

Although it is axiomatic that a significant change in ceramic recipes indicates a change in tradition, with the exception of the aforementioned adoption and apparent rejection of grog temper, type-variety definitions for plainwares make any change at all in this region hard to measure. At 16 CM 61, fully ninety per cent of the ceramics collected during 1985 were undecorated plainware sherds.

What the type-variety system has accomplished in

Southwestern Louisiana is to point out that at some time in later prehistory, during the Coles Creek period (Springer 1973; Burden et al. 1978; Aten 1983), conceptual modes of pottery manufacture changed somewhat to incorporate ideas that already were widespread in the Lower Mississippi Valley, and across most of the Gulf Coast. The reasons for and the mechanisms of that change remain unknown; whether or not those changes reflect significant acculturative processes cannot be ascertained at present. In addition, the regional chronology is insufficiently established at present to judge the extent of temporal lag in the adoption of ceramic types or modes, a factor that Gibson (1975:12-13) thinks has special significance for the Mermentau River area.

The point is that until some basic archeological patterns can be recognized, the prehistory of the region is likely to continue to be viewed in terms of its resemblances to and differentiation from neighboring cultural manifestations. This relegates the region to the status of a non-entity. If patterns of change in ceramics cannot be recognized, or if complexes cannot be defined because of lack of significant variability, the search for patterns should focus on other aspects of the remains.

With these caveats in mind, it remains the case that all that currently is understood about the prehistoric ceramics of the region is founded in the type-variety descriptions available for Southeastern Texas and the Lower Mississippi Valley. For that reason, ceramics collected from 16 CM 61 in 1985 were classified using the conventional techniques; Mr. Joe Frank, of Lake Charles, Louisiana, assisted in this classification, the results of which are shown in Table 1. As noted above, Goose Creek Plain and Baytown Plain var. San Jacinto dominated the collection; their frequencies were roughly comparable. Decorated sherds comprised less than ten per cent of the collection. Of these, Pontchartrain Check-stamped var. Pontchartrain was the most frequent; one sherd of var. Tiger Island also was recovered. A single sherd with characteristic Pontchartrain Check-stamped decoration had the typical Goose Creek Plain sandy paste, indicating its manufacture by a local potter; it has been designated Pontchartrain Check-stamped var. Mermentau in Table 1. Following Brown (1984:99), the decorated ceramics from 16 CM 61 indicate a Coles Creek period placement; the numbers of decorated sherds are too small, and the local sequence is too poorly documented to warrant assignment to any particular phase. Furthermore, despite affinities in decorated ceramics to the Lower Valley Coles Creek period types, the plainware sherds that formed the majority constituents of the collection required classification using Southeastern Texas types.

Clearly, the logical point of departure for ceramic analysis at 16 CM 61 involves the sandy paste plainware - grog-tempered

Table 1. Artifacts Collected from 16 CM 61 during 1985.

	EU1 Stratum III	EU1 Stratum IV	EU2 Stratum IIIb	EU2 Stratum IIIc	EU3 Stratum III	EU3 Stratum IV	Beach Surface Collection	TOTAL
<u>Prehistoric Ceramic Sherds</u>								
Baytown Plain var. <u>San Jacinto</u>	73	7	10	20	4	1	17	132
Goose Creek Plain var. <u>unspecified</u>	77	19	7	35	17	6	15	176
Goose Creek Incised var. <u>Goose Creek</u>	2			3				5
Goose Creek Incised var. <u>unspecified</u>							4	4
Pontchartrain Check-stamped var. <u>Pontchartrain</u>	12	3	3				1	19
Pontchartrain Check-stamped var. <u>Mermentau</u>		1						1
Pontchartrain Check-stamped var. <u>Tiger Island</u>				1				1
San Jacinto Incised var. <u>unspecified</u>					1			1
SUBTOTAL PREHISTORIC CERAMICS	164	30	20	59	22	7	37	339

Table 1. Continued

	EU1 Stratum III	EU1 Stratum IV	EU2 Stratum IIIb	EU2 Stratum IIIc	EU3 Stratum III	EU3 Stratum IV	Beach Surface Collection	TOTAL
<u>Miscellaneous Artifacts</u>								
Machine cut nails				4				
Miscellaneous metal	1			3				
TOTAL ARTIFACTS	165	30	20	66	22	7	37	347

plainware dichotomy. The classificatory history and type descriptions of Goose Creek Plain and Baytown Plain var. San Jacinto are described in detail in Aten (1983:231-241). Following classification of plainware types from the three excavations at 16 CM 61, the relative frequencies of Goose Creek Plain and Baytown Plain var. San Jacinto were plotted on a serigram (Figure 14). Although the number of sherds per stratum sample on the average is very small, this seriation demonstrates increasing relative frequencies of Baytown Plain var. San Jacinto from deep to shallow within each of the three units. Relative frequencies of Goose Creek Plain decline proportionally. When the strata cuts are organized in seriation sequence, Unit 3, the northernmost test, appears to be slightly earlier than the other two units. The two interbedded substrata of Stratum III in Unit 2 that produced sherds have somewhat different frequencies of plainware types, as well.

It is difficult to know what this simple seriation means in chronological or behavioral terms. It may indicate episodic use of the site over a number of seasons during a period of change in ceramic technology; the stratigraphic setting observed in Unit 2 and in several auger tests would seem to support an hypothesis of periodicity in refuse disposal at the site. The seriation appears to show that the site first was occupied at a time when grog-tempered pottery was not in widespread use, and that grog-tempered ware increased in popularity thereafter. This conclusion is strengthened by the fact that plainware frequencies from each of the three units showed the same direction of change. This factor argues that the result is not random, or a relict of the methodology. If this result is taken at face value, and if the apparently regular behavior of plainware sherd frequencies reflects a real chronological trend, then at least part of the site retains some of its stratigraphic integrity.

A very tentative chronological placement can be obtained by aligning the plainware frequencies shown in Table 1 and in Figure 14 with Aten's (1983, 1984:79) seriation chronology for the Galveston Bay area. In that chronology, Baytown Plain increases to fifty per cent of the ceramic subassemblage roughly between A.D. 1300 and 1500. Baytown Plain sherds are absent in the Galveston Bay chronology prior to approximately A.D. 1000, and they increase very gradually thereafter until popularity is maximized after A.D. 1300. If Baytown Plain was adopted in the Lower Mermentau at around the same time as it appeared in the Galveston Bay area, the earliest occupation level at 16 CM 61 should date ca. A.D. 1000, and the latest would align ca. A.D. 1300, or so. While there no doubt is some overlap in dates, it is difficult to conceive of the site 16 CM 61 as having a use life of three hundred seasons or years; the numbers of clams do not seem to warrant that conclusion, nor do the vertical and horizontal extents of the midden.

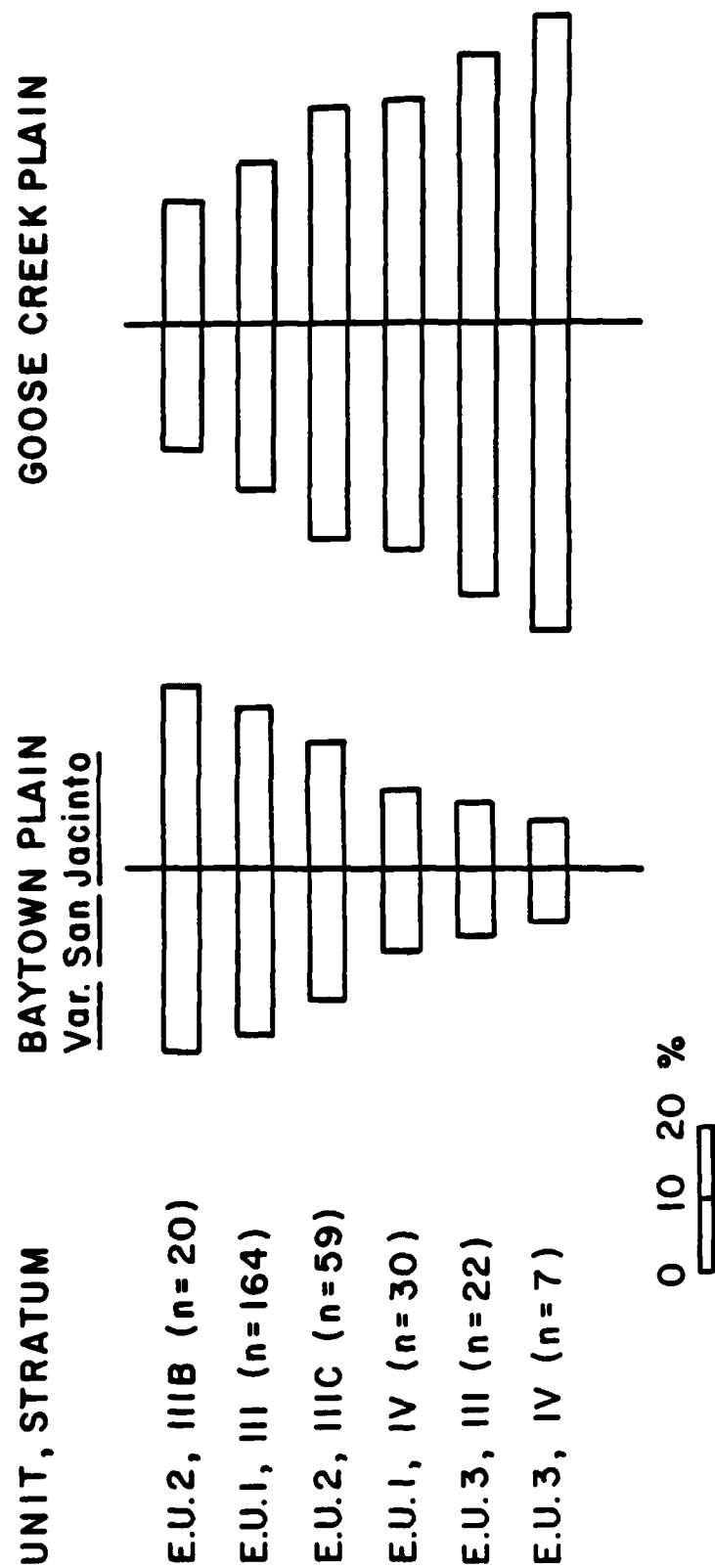


Figure 14. Seriation of plain ware sherds from strata cuts at 16 CM 61.

Two ^{14}C dates have been obtained for the site 16 CM 61; both derive from Rangia shell samples. The date from Stratum II in Unit 2 places that deposit at 850 ± 50 B.P., or A.D. 1100 \pm 50. The date from Stratum III in Unit 2 was 830 ± 50 B.P., or A.D. 1120 \pm 50 (Appendix 2). These dates are compatible with the Coles Creek period assignment mentioned earlier; Aten (1983:329-341), in his discussion of the radiocarbon behavior of carbonaceous clam shells, notes that while Rangia dates in general are older than charcoal dates from the same contexts, that problem is not likely to be severe enough to require correction in Mermentau River shell middens. He writes:

The Mermentau drains only the Quaternary formations of the coastal plain rather than any ancient limestone terrain. Given this hydrologic setting, a shell radiocarbon date should be only modestly older than contemporaneous charcoal (Aten 1983:335).

Faunal Remains

Because prehistoric sites along the Lower Mermentau River consist almost entirely of shell refuse, and because of the importance of faunal analysis to understanding the nature of these sites, as well as their behavioral connotations, emphasis was given both in the field and in the laboratory to the recovery of data pertaining to prehistoric cultural ecology. As noted above, fifteen liter matrix samples were taken from each midden stratum identified during field work. These samples were processed in the laboratory, using froth flotation techniques. Interestingly, no seeds or other significant botanical samples were recovered during flotation.

Following water separation, the heavy fractions of each of the matrix samples were turned over to Dr. Kenneth Gobalet for zooarcheological analysis. Dr. Gobalet's sorting procedure involved (1) the removal of Rangia shells for inventory and further study, and (2) examination of the remainder of the heavy fraction samples for other faunal remains, especially fish otoliths to be used in seasonality studies. A hand lens and a dissecting microscope were used in this latter stage of sorting. Although Rangia shells from the portions of midden not removed in matrix sample units were not collected, all other organic remains recovered in the field were curated for inclusion in Dr. Gobalet's analysis. As will be seen, no fish otoliths were recovered during field work; some may have passed through the 1/4" mesh used for water screening, since small otoliths were recovered during

laboratory processing of matrix samples.

Faunal remains then were identified to species, wherever possible. The molluscs were identified following illustrations and descriptions in Andrews (1971,1981). Vertebrate remains were identified using type collections at Loyola and Tulane Universities, in New Orleans. The species list that resulted from these identifications is shown in Table 2; Table 3 provides a list of the species and elements recovered by provenience unit. As Table 2 illustrates, fish predominated among vertebrate remains. Teeth of alligator, mink, and muskrat also were found. The following discussion of faunal analyses was written by Dr. Gobalet.

Methods for Determining Seasonality

Two entire and two partial otoliths were found and identified as being from the freshwater drum, Aplodinotus grunniens. Otoliths are commonly used to age fish and therefore determine the season of death (see Chilton and Beamish, 1982). Smith (1983) used otoliths of the black drum, Pogonias chromis, to determine that winter was the most likely time of death of these fish from a late Prehistoric site on the Lower Texas Coast. Pogonias chromis and Aplodinotus grunniens both have large otoliths. Distinguishing between them is difficult.

The procedures outlined by Smith (1983) were applied in determining the season of death of the four fish that are represented by these otoliths. The broken surfaces of the two fragments were ground flat using 120 and 220 grit sandpaper. Oil was applied to the flat surface to enhance reading the rings under a dissecting microscope. The two complete otoliths were broken transversely; the broken edges then were ground, oiled, and read on a dissecting microscope.

Shells of the brackish water clam Rangia cuneata are unquestionably the dominant materials recovered during excavation. Aten (1981) has devised a method of determining the season of death of Rangia which is based on the relative abundance of individuals fitting into each of four growth classes. Individual whole shells are used. The annular growth increments are determined, and the amount of growth beyond the last region of interrupted growth is noted. Clam death will be during an interrupted stage (I), after early (E), middle (M), or late (L) growth following the previous interrupted stage. For each sample, a histogram of relative abundance (expressed in percent) in each of the four growth classes is prepared and compared with histograms prepared from Rangia whose time of death was known (Aten 1981).

**Table 2. Faunal Species Identified from Midden Deposits
at 16 CM 61.**

Mollusc

<u>Rangia cuneata</u>	brackish water clam
<u>Crassostrea virginica</u>	Eastern oyster
<u>Littoridina sphinctostoma</u> (?)	
<u>Episcynia inornata</u>	hairy vitrinella

Fish

<u>Amia calva</u>	bowfin or choupique
<u>Aplodinotus grunniens</u>	freshwater drum, gaspergou
<u>Ictalurus</u> sp.	Catfish (4 possible species)
<u>Lepisosteus</u> sp.	gar (4 possible species)
Centrarchidae	sunfish family

Reptile

<u>Alligator mississippiensis</u>	American alligator
Or. Testudines	turtles
Suborder Serpentes	snakes

Mammal

<u>Mustela vison</u>	mink
<u>Ondatra zibethica</u>	muskrat

Table 3. Faunal Remains by Species and Elements for Proveniences Excavated at 16 CM 61 during 1985.

SPECIES		ITEM IDENTIFIED
UNIT 1, STRATUM III		
Molluscs	<u>Rangia cuneata</u> <u>Crassostrea virginica</u>	1198 valves 7 shell pieces
Fish	<u>Lepisosteus</u> sp. <u>Amia calva</u> <u>Aplodinotus grunniens</u> unidentified Teleosts	6 vertebrae, 53 scales 2 vertebrae, 7 skull fragments 2 otoliths, pharyngeal tooth 5 vertebrae
Turtle		shellpiece, humerus fragment
Mammal	<u>Ondatra zibethica</u> <u>Mustela vison</u>	molar fragment of molar
UNIT 1, STRATUM IV		
Molluscs	<u>Rangia cuneata</u>	194 valves
Fish	<u>Lepisosteus</u> sp.	scale
UNIT 2, STRATUM III (Zone A)		
Mollusc	<u>Rangia cuneata</u> <u>Crassostrea virginica</u>	551 shells shell
Fish	<u>lepisosteus</u> sp. <u>Ictalurus</u> sp. unidentified teleost	7 vertebrae, 5 scales 3 vertebrae, dorsal spine fragment vertebra
Bird		femur

Table 3, Continued

SPECIES	ITEM IDENTIFIED
UNIT 2, STRATUM III (Zone B)	
Mollusc	<u>Rangia cuneata</u> 961 shells
Fish	<u>Lepisosteus</u> sp. vertebra, 2 scales dorsal spine fragment
Turtle	shell piece
UNIT 2, STRATUM III (Zone C)	
Mollusc	<u>Rangia cuneata</u> 168 shells
Snake	vertebra
UNIT 2, STRATUM IV	
Mollusc	<u>Rangia cuneata</u> 20 shells
Fish	<u>Lepisosteus</u> sp. scale unidentified teleost tiny vertebra
UNIT 3, STRATUM III	
Mollusc	<u>Rangia cuneata</u> 681 shells <u>Littoridina</u> shell fragment sphinctostoma (?) <u>Episcynia inornata</u> (?) shell
Fish	<u>Lepisosteus</u> sp. vertebra <u>Ictalurus</u> sp. pectoral spine unidentified teleost fragment, 3 vertebrae 4 vertebrae

Table 3, Continued

	SPECIES	ITEM IDENTIFIED
Reptile	<u>Alligator mississippiensis</u>	tooth
UNIT 3, STRATUM IV		
Mollusc	<u>Rangia cuneata</u>	161 shells
Fish	<u>Lepisosteus</u> sp. <u>Ictalurus</u> sp. <u>Amia calva</u> <u>Aplodinotus grunniens</u> or <u>Pogonias chromis</u> unidentified teleost	2 vertebrae, 2 scales pectoral spine piece vertebra, toothed bone 2 pharyngeal teeth 4 vertebrae, ctenoid scale
Mammal	<u>Ondatra zibethica</u>	femur piece
Reptile	<u>Alligator mississippiensis</u>	tooth
Turtle		shell piece
MATRIX SAMPLES, STRATUM III		
Mollusc	<u>Rangia cuneata</u>	1068 shells
Fish	<u>Lepisosteus</u> sp. <u>Aplodinotus grunniens</u>	13 scales vertebrae, 2 otolith fragments
Mammals	rodent, rat size	metacarpal or metatarsal

Fifty clams from six matrix samples were measured. Figure 15 shows the frequency distribution for season of capture (death) of Rangia shells from eight samples at site 16 CM 61. Only thirty-seven clam shells were collected in the matrix sample from Unit 3, Stratum IV. The matrix sample designated Unit N 5017, E 4998, Stratum III, was collected from the northwest corner of Unit 3. It can be compared to the matrix sample collected from elsewhere within Unit 3, Stratum III. Figure 16 shows the histograms with which these were compared (from Aten 1981). The month in parenthesis in Figure 15 below the histogram for each sample is based on this comparison. On this histogram, E, M, L, and I stand for each of the growth categories early, middle, late and interrupted.

Evidence for Seasonality at 16 CM 61

As Figure 15 illustrates, analyses of Rangia cuneata shells from all matrix samples from 16 CM 61 clearly indicate deposition of shellfish valves during the months of May to July. All but Unit 1, Stratum III, indicate occupation from May to June. This is consistent with Aten's (1981) observations for sites in Texas, and with the summary of results for shellfish seasonality studies in Texas recently published by Claassen (1986). Two of the otoliths of Aplodinotus grunniens also indicate summertime death, a finding consistent with the results obtained for Rangia seasonality. The other two otoliths show death at a time of slow growth (annulus on the edge of the otolith); this may indicate death during the winter months, or it might indicate a late Spring in a given year, e.g., a cold April. Despite these two anomalous otoliths, the data overwhelming support a warm weather occupation at 16 CM 61. If this site was utilized over a period of years, then it appears to constitute a late Spring to early Summer fishing camp.

Other Utilized Species

The two mammals represented, the mink, Mustela vison, and the muskrat, Ondatra zibethica, are common fur bearing inhabitants of marshes in Louisiana (O'Neil 1949; St. Amant 1959). The alligator, Alligator mississippiensis, turtles, and snakes are also expected inhabitants of the marsh. None of these animals is an unexpected find in the midden, but their rarity among the remains may indicate less emphasis on their capture than for Rangia.

All of the fish identified are common in bayous or streams in Louisiana (Douglas 1974). Any of four species of gar (genus Lepisosteus) may be represented: spotted gar, L. osseus; shortnose gar, L. platostomus; alligator gar, L. spatula. Four species of catfish are also possible: blue catfish, Ictalurus furcatus; black bullhead, I. melas; yellow bullhead, I. natalis;

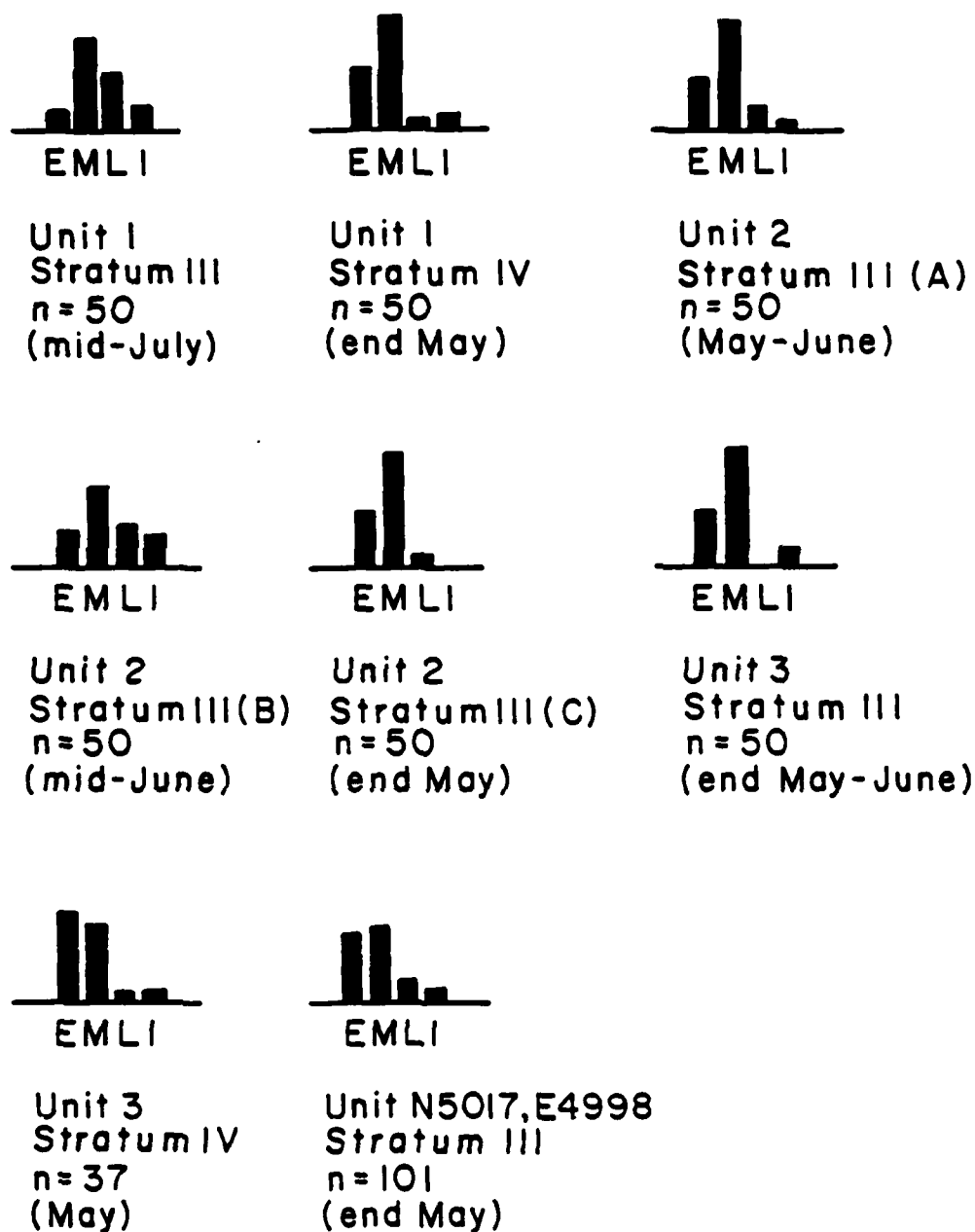


Figure 15. Histogram of growth stage and season of death for Ranqia cuneata shells from matrix samples at 16 CM 61.

NB. Unit N5017, E4998, Stratum III represents a sample (n=101) from Unit 3, Stratum III, collected independently of the standard shell sample (n=50) in that stratum.

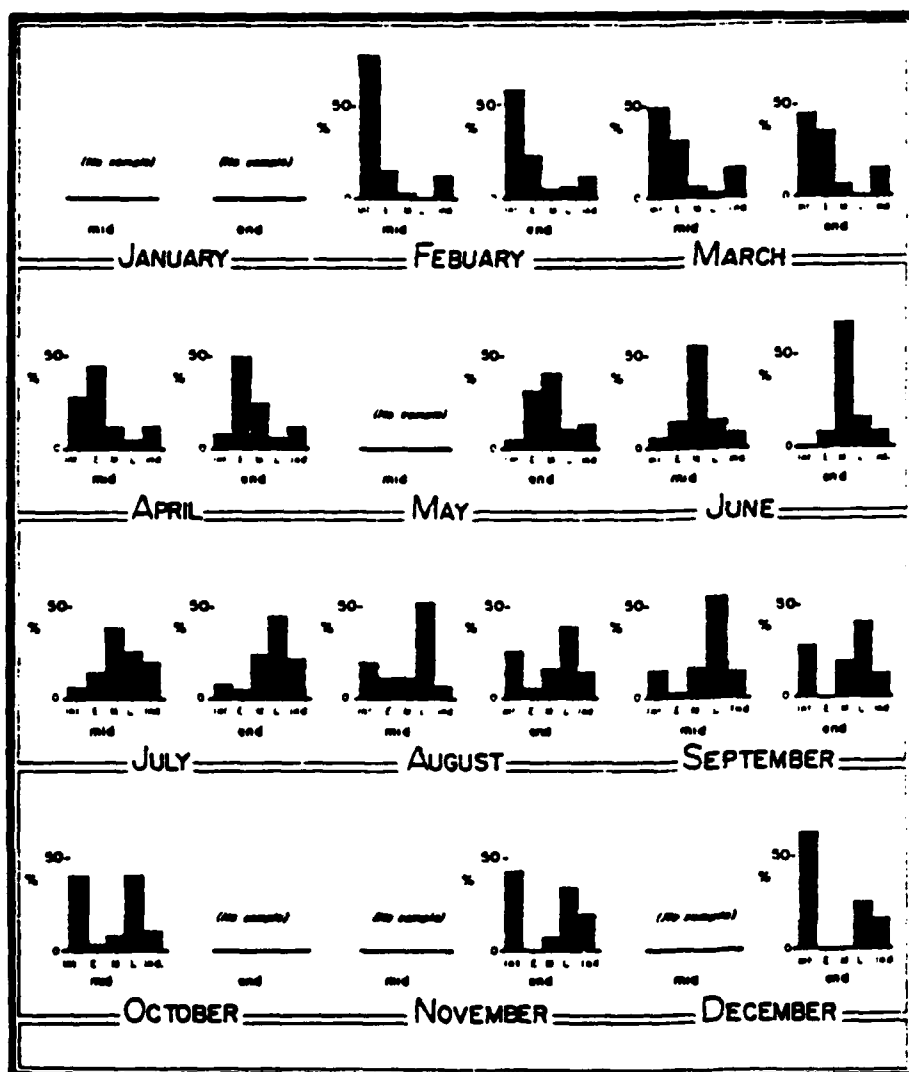


Figure 16. Growth stage histograms for modern *Rangia cuneata* from the Upper Texas Coast (after Aten 1981).

channel catfish, I. punctatus. The bowfin, Amia calva is an air breather and may be found in backwaters choked with vegetation. The freshwater drum Aplodinotus grunniens is the only fresh water representative in Louisiana of the commercially important marine family Sciaenidae that includes the redfish, speckled trout, croaker, and black drum. The otoliths and pharyngeal teeth of Aplodinotus are very similar to those of the black drum, Pogonias chromis, and the two may be confused. The sunfish family Centrarchidae is a large family of sport fishes. Five genera and fifteen species in Louisiana are called by common names such as bream, perch, crappie, rock bass, white perch, specks, and bluegill. They are quite common and may be found in all possible freshwater habitats.

Discussion

The configuration of the site 16 CM 61 was described above in Chapter IV; briefly, the site constitutes a dense Rangia cuneata shell midden that forms a roughly linear pattern along the bankline of the Mermentau River. The Rangia midden formerly extended farther to the south and east of the present site area, as indicated by exposed midden in the riverbank. Riverine erosion and the dredging of a small drainage canal along the southern perimeter of the site have destroyed an undetermined portion of the original site. Nevertheless, stratigraphic excavations during 1985 indicated that surviving midden deposits remain in situ, although varying degrees of disturbance were noted in portions of the site.

The analyses of ceramic artifacts from 16 CM 61 presented above indicate that the site has internal microstratigraphy indicative of multiple episodes of activity and refuse disposal. Discrete depositional episodes may be observed in their vertical aspects, as was the case in the interbedded midden observed in Unit 2, and they may be represented in horizontal patterning, as indicated in the seriation of ceramic plainwares. The ceramic classification presented above (Table 1) indicates a Coles Creek period chronological placement; alignment of plainware frequencies with the Galveston Bay ceramic chronology prepared by Aten (1983, 1984) suggests occupation between A.D. 1000 and A.D. 1300. Two ^{14}C dates from Unit 2 place Stratum IIB at A.D. 1100 ± 45 years; Stratum III was dated at A.D. 1120 ± 50 years (see Appendix 2).

One interesting characteristic of the ceramic subassemblage from this site is that the decorated sherds are dominated by popular Gulf Coast and Lower Valley types, such as Pontchartrain Check-Stamped var. Pontchartrain, while plainware sherds in general resemble either the Texas supertype Goose Creek Plain or a Southeastern Texas variant of Baytown Plain (var. San Jacinto) that combines crushed sherds of Goose Creek Plain into a standard Goose Creek Plain ceramic body to form a grog-tempered sandy paste.

In one example, Pontchartrain Check-stamped decoration was applied to a Goose Creek Plain ceramic body, as if local potters were copying an exogenous motif. These factors indicate that detailed analysis of a substantial ceramic subassemblage from this site, or from other chenier sites in the region, might result in the definition of a complex that could be identified as peculiarly indigenous. Such a result would enable confirmation of nature of the material culture of the prehistoric forerunners of the historic Attakapas; it also might enable study of processes of acculturation at the fringe of two culture areas. The seriation of ceramic plainwares at 16 CM 61 seems to indicate a gradual transition from use of sandy paste wares typical of Southeastern Texas and Southwestern Louisiana sequences to use of a grog-tempered plainware that appears to represent the mestizaje of two traditions, rather than total replacement.

Faunal analyses also have provided useful information on cultural ecology. In particular, seasonality determinations on Rangia cuneata and on fish otoliths indicate that virtually all strata were deposited during the warm late Spring or Summer months. Thus, models of seasonal transhumance for the historic Attakapas, such as those propounded by Gibson (1975) and by Aten (1983), can be retrodicted into prehistory as far back, at least, as the advent of grog-tempered pottery during the Coles Creek period. Both Aten and Gibson have argued that the Attakapas followed a seasonal round whereby bands aggregated inland during the Winter to take advantage of acorn and terrestrial faunal resources; during warmer months, small bands moved to coastal areas. In her recent article on shellfishing seasons, Claassen (1986) argued that shellfish may be more important in the diets of horticulturalists than in those of hunter gatherers. Although this may be the case where shellfish are providing small quantities of concentrated protein to people with diets high in kilocalories from root crops (Goodwin 1979, n.d.), the pattern of transhumance evidenced in the Mermentau, as well as in Southeastern Texas, appears to be a survival of a longstanding Archaic subsistence pattern. Certainly ethnohistoric accounts downplay the role of horticulture in Attakapas culture, and no compelling archeological evidence for horticulture has been forthcoming to date.

The relative paucity of other classes of organic remains besides Rangia at 16 CM 61 probably represents opportunistic catchment of fish and terrestrial animals. The presence of scattered oyster shells in basal deposits at the site, where they are admixed with far greater numbers of clam shells, may evidence a subsidiary intermittent fishery by band members who travelled downstream to saltier waters. The observation of oyster shells in other sites in the area, also in small quantities (Springer 1973; Gibson 1975), indicates that oysters may have been available

closer to these cheniers than now is the case; it also may indicate exchange, or the aforementioned subsidiary fishery. However, the stratigraphic setting of these oysters in a clam shell matrix seems to preclude localized gathering.

Finally, the results of excavation and analyses at 16 CM 61 failed to confirm the stratigraphic setting described by Tribble and Garrison (1982). In addition, no Plaquemine or Mississippian sherds were found during the 1985 excavations. Their observation that spoil placed on top of the site is protecting buried deposits there in situ appears to obtain on the southern end of the site; as noted above, spoil run off does not extend eastward to the beach. Erosion at 16 CM 61 is a gradual process; observations in 1985 suggest that major destruction follows storm surges and floods, with exposed midden thereafter being reworked slowly by wave wash from light vessel traffic.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Archeological testing at the site 16 CM 61, a prehistoric shell midden in Cameron Parish, Louisiana, was designed to provide information requisite to evaluation of the potential significance of the site, applying the National Register criteria (36 CFR 60.4). The framework for this assessment of significance was provided by a series of research questions developed in Louisiana's Comprehensive Archaeological Plan (Smith et al. 1983), and in the scope of work for this project provided by the New Orleans District, Corps of Engineers. These research questions focused on the archeology of the Chenier Plain, on coastal settlement and subsistence systems, on the relationship of the site 16 CM 61 to other sites in the region, and on the relationship of the material culture at the site to documented assemblages in Southeastern Texas. In addition, recent models of Attakapas seasonal transhumance advanced by Gibson (1975) and by Aten (1983, 1984) provided both a theoretical framework for faunal analysis and a specific test of the ability of archeological remains from the site to provide information important to understanding of prehistory [36 CFR 60.4(d)]. Finally, archeological excavation and the analysis of recovered remains were designed to enable assessment of the contextual integrity of the site.

The cultural chronology of the Chenier Plain region is poorly documented. Systematic excavations in this area have been few, and the most completely excavated site in the immediate vicinity of 16 CM 61, the Pierre Clement site (16 CM 47), appears to post-date the occupations under consideration here (Springer 1973, 1979). Although the ceramic subassemblage from 16 CM 61 was small, seriation ordering of the strata cuts demonstrated a redundant pattern of increasing popularity in grog-tempered Baytown Plain ceramics. The fact that decorated ceramics from this site in general resembled Lower Valley types, while undecorated ceramics resembled Southeastern Texas variants, indicates a mixing of traditions on the fringe of two culture areas. Preliminary results from ceramic analyses indicate that the nature of ceramic traditions in the region, the direction of change in ceramic manufacture, and processes of culture change, such as acculturation, all might be addressed using data from this site. The relatively small number of potsherds excavated during 1985 may reflect what Gibson (1975) has called a "poverty" in material culture among the prehistoric antecedents of the Attakapas, as much as the limited activity nature of the site. Ceramic remains from the site did provide chronological information; frequencies of key types were compared with reasonable results with the ceramic chronology developed for the Galveston Bay area by Aten (1983).

Thus, artifacts from 16 CM 61 already have provided and they have the potential to provide additional information important to understanding of prehistory [36 CFR 60.4(d)].

Faunal remains from 16 CM 61 have enabled documentation of the seasonal nature of the shell midden deposits. In addition, fish otoliths recovered during fine-grained analyses of matrix samples have helped to confirm an occupation sequence during late spring and early summer. These data conform to the hypothetical expectations of two current models of seasonal transhumance of the historic Attakaps and their prehistoric forerunners advanced by Gibson (1975) and Aten (1983). Recent attention in the archeological literature to shellfish seasonality studies (Claassen 1986) has raised a number of issues about the role of shellfish proteins and carbohydrates in mixed horticultural and hunter-gatherer economies. Most recent studies on this subject (e.g., Claassen 1986; Goodwin in press) have pointed to a more substantial role for shellfish protein in horticultural societies. The site 16 CM 61, on the other hand, appears to represent a seasonal shell fishery deriving from a long-standing Archaic subsistence pattern. The now demonstrated capability of this site to contribute to understanding of seasonal transhumance and of subsistence systems has provided information important to the understanding of prehistory [36 CFR 60.4(d)]. The application of fine-grained recovery techniques to matrix samples in the laboratory also has been shown to hold promise for the study of classes of ecofacts that hold the potential to further understanding of cultural ecology.

Although the site 16 CM 61 has been subjected to the destructive processes of dredging and erosion, excavation during 1985 revealed zones of interbedded Rangia midden with sufficient microstratigraphy to enable more fine-grained analyses than were undertaken during this project. The presence of a spoil cap over part of the site appears to have retarded further destruction of archeological context in these locales. The documented presence of midden deposits with contextual integrity, and the potential of those deposits to contribute further to our understanding of prehistory is clear. Given the fact only six square meters of surface area were excavated to sterile subsoil in 1985, while the total site area seems to exceed 350 m², indicates that additional in situ deposits are preserved in place at this time. Because of the demonstrated ability of artifacts and ecofacts from 16 CM 61 to contribute to knowledge of prehistory, on the documented presence of in situ deposits at the site, and on the near total lack of carefully recorded comparable sites in the region, it is believed that 16 CM 61 possesses the quality of significance requisite to nomination for and inclusion on the National Register of Historic Places.

As demonstrated in Chapter IV, current impacts to the site are confined to gradual reworking of exposed beach deposits due to the erosive force of vessel traffic wave wash on the Lower Mermentau River. However, modern vessel traffic appears to be sufficiently light so that it does not present an urgent and immediate adverse effect to this cultural resource. Rather, storm surge and floodwaters appear to have a rapid and direct impact on midden deposits located immediately adjacent to the bankline of the Mermentau River. This pattern of site destruction, which was documented through site visits immediately before and after Hurricane Juan in 1985, indicates a likelihood that erosion, in combination with ongoing subsidence of the coastal marsh, ultimately will destroy this site.

Because of the demonstrated archeological significance of 16 CM 61, and due the potential for adverse effect cited above, it is recommended that documentation for determination of eligibility be submitted to the Keeper of the National Register. Until such time as a direct project impact is established, archeological monitoring of the changing condition of this site should be undertaken minimally after each major flood or storm surge.

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APPENDIX 1

**REVISED
SCOPE OF SERVICES**

**EVALUATION OF THE NATIONAL REGISTER ELIGIBILITY
OF ARCHEOLOGICAL SITE 16CM61,
A PREHISTORIC SHELL MIDDEN IN CAMERON PARISH, LOUISIANA
CONTRACT DACW29-84-D-0029**

1. Introduction. Archeological site 16CM61 is a prehistoric shell midden located on the right descending bank of the Mermentau River in Cameron Parish, Louisiana at approximate mile 17.5. The site is situated on the extreme east end of Chenier Perdue Ridge where it intersects the Mermentau River (see Attachment 1). The site is small in horizontal extent, 2 acres or less.

This cultural resource has been identified as potentially eligible for inclusion in the National Register of Historic Places based on its research potential. The site is in the potential impact area of the Mermentau River, Gulf of Mexico Navigation Channel project. The potential impact of the project is bankline erosion resulting from navigational use of the lower Mermentau River. However, a project effect has not yet been confirmed or quantified.

The site is located on the west bank of the Mermentau River adjacent to the flood control channel of the Mermentau River, Louisiana project. This project was authorized by the Flood Control Act of 1941 and provides for the enlargement of the lower Mermentau River below Grand Lake to a minimum cross-sectional area of 3,000 square feet below Mean Low Gulf for discharge of flood flows. The navigational use of this channel is mainly attributable to the Mermentau River, Gulf of Mexico Navigation Channel, a Corps-maintained project. The Mermentau River, Gulf of Mexico, Navigation Channel was constructed in 1971 by local interests with Federal assumption of maintenance in 1976. This project realized the navigational potential of this channel by connecting it with the Gulf of Mexico. The economic justification for Federal maintenance of the Navigation Channel is the continuance of navigation on the lower Mermentau River. Thus, any erosional impacts on site 16CM61 resulting from navigation on the lower Mermentau is attributable to the Mermentau River, Gulf of Mexico, Navigational Channel.

The vessels which utilize the lower Mermentau River above Grand Cheniere, i.e. the vessel traffic which passes by site 16CM61, consists mostly of shrimp trawlers and sport fishing boats. This use is much less intense than waterways such as the Gulf Intracoastal Waterway and the Barataria Bay Waterway and, thus, the erosional impacts are probably correspondingly less severe.

The New Orleans District, Corps of Engineers and Louisiana State Historic Preservation Officer have agreed upon a plan of action which recognizes that site 16CM61 is in the potential impact area of the Mermentau River, Gulf of Mexico Navigation Channel project but also recognizes that the National Register eligibility of the site has not been determined and a project effect has not been confirmed. The first step is archeological testing to determine the integrity and research potential of the site. If the site is determined eligible for inclusion in the National Register, we will then institute an erosion monitoring program. This would involve the establishment of a datum and detailed mapping of the site. The erosion rate at the site would then be monitored over a few years and compared to prevailing rates in the region. If an adverse project effect is determined, we would consult with the SHPO and Advisory Council on Historic Preservation to develop an appropriate mitigation program.

The work to be performed under this contract will consist of the first step in this procedure; archeological testing of the site to determine its National Register eligibility. The testing will include detailed site mapping which will aid site interpretation and support the erosion monitoring program, if required.

2. Background Information. The most detailed information available on site 16CM61 is found in the report dated October 1982 entitled, Cultural Resources Survey of the Calcasieu River and Pass, and the Mermentau River, Louisiana, prepared by James S. Tribble and Ervan G. Garrison of the Cultural Resources Laboratory of Texas A&M University. This report documents the survey of the Mermentau River from Grand Lake to the Gulf of Mexico conducted in 1980 under contract to the New Orleans District. The authors concluded that two (16CM61 and 16CM47) of the 18 sites located by the survey hold the greatest potential for addressing pertinent local and regional research questions. The authors also concluded that site 16CM61 was being adversely affected by project-induced erosion.

The Texas A&M study provides descriptive and evaluative information on site 16CM61. The site is described as a multi-component mullinia (probably Rangia cuneata) and oyster (Crassostrea virginica) shell midden. Uncontrolled shovel tests revealed a clearly defined natural stratigraphy extending approximately 70cm below the surface. The stratigraphy is reported to consist of distinct horizons of pure mullinea shell deposits, pure oyster shell, and mixed mullinia and oyster shells. Surface collection of ceramics produced a sample dominated by Coles Creek period types, as well as reported Plaquemine and Mississippian sherds. Faunal materials represented fish, alligator, and mammals.

The significance of this resource is based on its potential as a data base for testing important archeological research questions. Louisiana's Comprehensive Archaeological Plan lists the important themes for Management Unit III which includes the study area (Smith et al, 1983). Several of these themes are pertinent to the research potential of site 16CM61:

- a. Southwest Louisiana and Its Interaction with Eastern Texas
- b. The Archaeology of the Cheniers
- c. Prehistoric Coastal Subsistence and Settlement Patterns

Site 16CM61, as described by Texas A&M staff, clearly has the potential to address these issues. The present state of knowledge on this site, however, is not adequate to assess its National Register eligibility. Controlled excavation, stratigraphic analyses, and detailed site mapping are required to determine its integrity and research potential. The integrity of this resource is of primary importance in this assessment. The site has been affected by the construction of a low containment dike on its landward boundary and erosion along its shoreline. The degree to which the site remains in situ directly affects its research potential.

3. Description of the Study Area. The study area consists of archeological site 16CM61. The site is located on the west bank of the Mermentau River at its intersection with Chenier Perdue Ridge in Cameron Parish, Louisiana. This places the site at approximate river mile 17.5 (baseline station 935 + 99.82) as indicated by red hatching on Attachment 2. The site is 2 acres or less in size. Access to the site is via boat from the Mermentau River.

4. General Nature of the Work. The work to be performed by the Contractor consists of archeological testing of site 16CM61 adequate to assess its National Register eligibility. The testing will include detailed site mapping, controlled surface collection, and limited controlled excavation. The site mapping will include the establishment of a grid over the site; such grid will be tied into a permanent benchmark. Excavation will be kept to the minimum necessary for eligibility determination.

The Contractor will prepare a research design prior to initiation of fieldwork, and upon completion of the fieldwork and data analyses, he will submit a detailed scientific project report.

5. Study Requirements. The work will be divided into three phases: Development of the Research Design, Fieldwork, and Data Analyses and Report Preparation.

a. Phase 1: Development of the Research Design. The Contractor shall begin the study with literature and records review. The purposes of this research are to develop the historic setting of site 16CM61 to serve as the framework for this study and to refine the fieldwork methodology. The product of this research is the submittal of a research design. The research design shall outline the historic setting of the study area and identify and define important data gaps and problems in our knowledge of the region's prehistory and history. The research design will include a statement of the general and specific theoretical goals in the form of hypotheses. Further, the research design will specify the data and techniques which will allow empirical testing of the hypotheses. Thus, the

research design will integrate research objectives with specific data collection and analyses techniques, and will serve as the guide for evaluation of site significance.

At a minimum, the following sources will be consulted by the Contractor:

- o Tribble, James S. and Ervan G. Garrison
1982 Cultural Resources Survey of the Calcasieu River and Pass,
and the Mermentau River, Louisiana
- o Gibson, Jon L.
1976 Archaeological Survey of the Mermentau River and Bayous
Nez Pique and Des Cannes, Southwest Louisiana
- o Burden, E.K. et al
1978 Cultural Resources Survey of the Lacassine National
Wildlife Refuge, Cameron Parish, Louisiana
- o Smith, Steven D.
1983 Louisiana's Comprehensive Archaeological Plan

As discussed in Section 2 above, the Louisiana State Plan has identified numerous themes relevant to research at site 16CM61. In addition to these, the following research questions/issues should be considered in the research design and subsequent fieldwork and analyses:

- (1) Record range of shell type and variability on site.
- (2) Compare shell from 16CM61 to other shell middens in the region (temporally and spatially).
- (3) Discuss importance of shell type as indicators of prehistoric settlement ecology and subsistence difference.
- (4) Compare material culture of 16CM61 to other shell middens in the Mermentau Basin.
- (5) Compare 16CM61 to 16CM6, the Onion Hill site.
- (6) How fragile is site 16CM61? Has it lost its integrity? Is the midden in situ?
- (7) Compare 16CM61 to other known sites in the lower Mermentau River. Make suggestions for future research in this area in regard to shell middens.

The written draft research design shall be submitted to the Contracting Officer's Representative (COR) within one week after work item award for review and approval. All review comments will be resolved or incorporated within one week after submittal.

b. Phase 2: Fieldwork. The methodology to be employed in the archeological testing will be that contained in the approved research design. Generally, however, the site testing will involve detailed site mapping, controlled surface collection and controlled excavation. The Contractor shall commence with the establishment of a grid over the site tied to a permanent datum. Utilizing shovel and auger testing and controlled surface collection, the Contractor shall determine the site boundaries, depth of deposit, stratigraphy, cultural association, and possible activity areas. The results of this effort will be used to select the locations of the test excavation units. These excavations shall be designed to determine the integrity, stratigraphy, range and density of various artifact categories, and research potential of the site.

Because of the small size of this site, excavation units will be limited to the minimum necessary to determine its National Register eligibility. Test units will be excavated in 5cm levels unless natural stratigraphic levels can be recognized. All profiles and features excavated will be mapped and photographed. Radiocarbon samples will be collected. Detailed site maps illustrating the horizontal extent of the site, the stratigraphy, the locations of shovel auger tests and hand excavation units, the delineation of disturbed portions of the site, and feature locations and artifact densities will be prepared. Field investigations must be completed by November 9, 1985. The right-of-entry terminates on that date.

c. Phase 3: Data Analyses and Report Preparation. All data will be analyzed using currently acceptable scientific methodology. The Contractor shall catalog all artifacts, samples, specimens, photographs, drawings, etc., utilizing the format currently employed by the Louisiana State Archeologist. The catalog system will include site and provenience designations.

The research design will guide the analyses and integration of data collected during the fieldwork. Site 16CM61 will be evaluated against the National Register criteria contained in Title 36 CFR Part 60.4 and within the framework of the historic setting to assess the potential eligibility for inclusion in the National Register. The Contractor shall fully support his recommendations regarding site significance.

6. Reports:

a. Phase 1, Research Design. Three copies of the report on the results of the phase 1 investigations will be submitted to the COR within 1 week after work item award for review and approval. This report will summarize the results of the literature review and records search, and will present in detail the proposed research design.

b. Draft and Final Reports (Phases 1, 2, & 3). Six copies of the draft report integrating all phases of this investigation will be submitted to the COR for review and comment within 16 weeks after work item award. Along with the draft reports, the Contractor shall submit three copies of support documentation for site 16CM61 if it is recommended as eligible for

inclusion in the National Register. This documentation will follow the format and contain all the data required by the Guidelines for Level of Documentation appended to Title 36 CFR Part 63. The Contractor shall also provide recommendations for mitigation of the site if he recommends it as eligible. The written report shall follow the format set forth in MIL-STD-847A with the following exceptions: (1) separate, soft, durable, wrap-around covers will be used instead of self covers; (2) page size shall be 8-1/2 x 11 inches with a 1-1/2-inch binding margin and 1-inch margins; (3) the reference format of American Antiquity will be used. Spelling shall be in accordance with the U.S. Government Printing Office Style Manual dated January 1973. The body of the report shall generally include the following: (1) introduction-study area; (2) review and evaluation of previous archeological investigations; (3) historic overview of the study area, environmental setting of the study area; (4) research design; (5) data analyses and cultural material inventories; (6) data interpretation; (7) data integration; (8) conclusions; (9) recommendations; (10) references; (11) bibliography; and (12) appendices, if appropriate. The COR will provide all review comments to the Contractor within 8 weeks after receipt of the draft reports (24 weeks after work item award). Upon receipt of the review comments on the draft report, the Contractor shall incorporate or resolve all comments and submit one preliminary copy of the final report to the COR within 3 weeks (27 weeks after work item award). Upon approval of the preliminary final report by the COR, the Contractor will submit 40 copies and one reproducible master copy of the final report to the COR within 30 weeks after work item award. Included as an appendix to the Final Report will be a complete and accurate listing of cultural material and associated documentation recovered and/or generated. In order to preclude vandalism, the final report shall not contain specific locations of archeological site. Site specific information, including one set of project maps accurately delineating site locations, black and white photographs and maps, shall be included in an appendix separate from the main report. The Contractor shall submit one reproducible master copy and 30 copies of this separate appendix with the final report.

7. References. The study will be conducted utilizing current professional standards and guidelines including, but not limited to:

- o the National Park Service's draft standards entitled, "How to Apply the National Register Criteria for Evaluation," dated June 1, 1982;
- o the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation as published in the Federal Register on September 29, 1983;
- o Louisiana's Comprehensive Archaeological Plan dated October 1, 1983; and;
- o The Advisory Council on Historic Preservation's regulation 36 CFR Part 800 entitled, "Protection of Historic and Cultural Properties".

APPENDIX 2

SAMPLE DESCRIPTION:

DIC- 3246

Site Name 16 CM 61 # 16 CM 61
 Sample # EU2, Stratum IIB
 Feature # _____
 Latitude: 29°48' N
 Longitude: 92°52' W
 Depth 40 cm

Coll. B. Owens by
 Subm. by S. Speaker

R. Christopher Goodwin & Associates, Inc.
 1306 Burdette Street, New Orleans, LA 70118

SAMPLE PREPARATION:

Charcoal, Wood, Peat, Gytjtjas, Cores & Sediments:

All samples are first examined and cleaned of obvious impurities. The sample is treated for humic acids with 2N NaOH at 100°C. for thirty minutes, decanted, filtered, washed, and picked for rootlets while wet. Free carbonates are removed with 2N HCl at room temperature for approximately forty-eight hours. The sample is then decanted, filtered, washed, again picked for rootlets while wet, dried at 90°C., and picked for rootlets and remaining impurities under 30X magnification.

Shell: Wet combustion in 50% H₃PO₄. Amount discarded by leaching _____ 30 %
 X-ray analysis _____ Thin section _____ C12/C13 ratios _____

Bone: Demineralization in 1% HCl. Details of collagen extraction provided upon request.

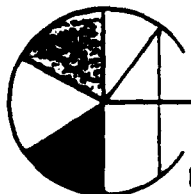
REMARKS:

Rangia cuneata shell. Preliminary cleaning for organics with dilute chlorox and distilled water.

Rootlets present? _____
 Free Carbonates? _____
 Other Contaminants: _____
 Other Treatments _____

COMBUSTION:

Amount of CO ₂ generated	<u>5</u> in. Hg. # <u>6</u> T.
Amount of lithium added	<u>18</u> grams
Weight of vial and sample	<u>22.1429</u> grams
Weight of vial	<u>17.5000</u> grams
Weight of benzene	<u>2.6424</u> grams
Weight of carbon	<u>2.4383</u> grams
Weight of benzene + scintillation solution	<u>4.4000</u> grams



RADIOCARBON AGE: 850 B.P. ± 50, -40
 A.D. 1100

DICARB RADIOISOTOPE CO., 4912 Stonehenge Lane, Norman, OK 73071 (405) 329-9338

SAMPLE DESCRIPTION:

DIC- 3247

Site Name 16 CM 61 # 16 CM 61
 Sample # EU2, Stratum III
 Feature # _____
 Latitude: 29°48' N
 Longitude: 92°52' W
 Depth 50 cm
 Coll. B. Owens by _____
 Subm. by S. Speaker R. Christopher Goodwin & Associates, Inc.
1306 Burdette Street, New Orleans, LA 70118

SAMPLE PREPARATION:

Charcoal, Wood, Peat, Gyttjas, Cores & Sediments:

All samples are first examined and cleaned of obvious impurities. The sample is treated for humic acids with 2N NaOH at 100°C. for thirty minutes, decanted, filtered, washed, and picked for rootlets while wet. Free carbonates are removed with 2N HCl at room temperature for approximately forty-eight hours. The sample is then decanted, filtered, washed, again picked for rootlets while wet, dried at 90°C., and picked for rootlets and remaining impurities under 30X magnification.

Shell: Wet combustion in 50% H₃PO₄. Amount discarded by leaching _____ 30 %
 X-ray analysis _____ Thin section _____ C12/C13 ratios _____

Bone: Demineralization in 1% HCl. Details of collagen extraction provided upon request.

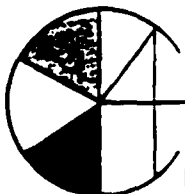
REMARKS:

Rangia cuneata shell. Preliminary cleaning for organics with dilute chlorox and distilled water.

Rootlets present? _____
 Free Carbonates? _____
 Other Contaminants: _____
 Other Treatments _____

COMBUSTION:

Amount of CO ₂ generated	<u>10</u> in. Hg. #4 T.
Amount of lithium added	<u>18</u> grams
Weight of vial and sample	<u>20.1400</u> grams
Weight of vial	<u>17.5000</u> grams
Weight of benzene	<u>2.6400</u> grams
Weight of carbon	<u>2.4357</u> grams
Weight of benzene + scintillation solution	<u>4.4000</u> grams



RADIOCARBON AGE: 830 B.P. ± 50

A.D. 1120

END

DICARB RADIOISOTOPE CO., 4912 Stonehenge Lane, Norman, OK 73071 (405) 329-9338